

# Easy Display Console User Guide



December, 2016

# **S/W preparation**

## **Step 1 : Install the Lumex Easy Display Console**

- Run the setup file “EzCSetup.msi” that download from [www.lumex.com.tw](http://www.lumex.com.tw)

## **Step 2 : Install the USB to UART converter driver**

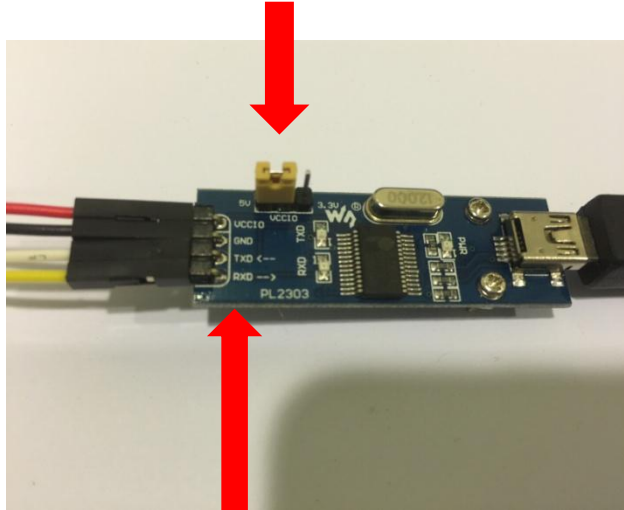
- Search for the “CP2102 driver” or clip the link <http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdri vers.aspx>
- Download the driver and install it on PC or Notebook
- Reboot the PC or Notebook

## **Step 3 : After H/W setup ready double clicks on the “Lumex EzDisplay” icon to run the console**

**Remark : The CP2102 is optional. User can choose their own USB to UART board.**

# H/W preparation

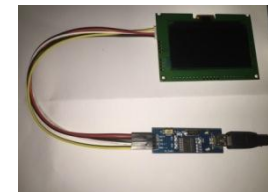
**Step 1 : Connect the Jumper switch to 5V**



**Step2 : Connect the Micro USB cable to USB to UART converter board**

**Step 3 : Connect cables to USB to UART converter**

- Red color cable connect to VCCIO
- Black color cable connect to GND
- White color cable connect to TXD
- Yellow color cable connect to RXD



**Step 4 : Connect cable to OLED or Dot matrix LED Display module**

**Step 5 : Connect the USB cable to PC or Notebook**

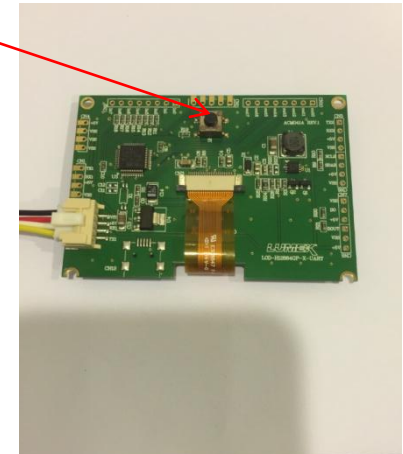
**Step 6: Before click on the “ezDisplay” icon please refer to next page**

# Special setting for OLED

The EZ Display Console runs AT command mode and Graphic mode.

However, the OLED module is default for HEX command mode, Please click the switch on the back to enter the AT command mode.

For Dot Matrix LED display module , it is default for AT command mode. There is nothing to be changed



# Device configuration

1. Click here to pop out the COM port list

3. Click on the Graphic Mode Tab to switch to Graphic window

Lumex UART Display Console [V1.5.8.5]

Device Configuration AT Command Mode Graphic Mode Font Maker

通訊連接埠 (COM1)  
通訊連接埠 (COM2)  
Prolific USB-to-Serial Comm Port (COM5)

BaudRate 115200  
DataBits 8  
DiscardNull False  
DtrEnable False  
Handshake None  
Parity None  
ParityReplace 63  
PortName COM1  
ReadBufferSize 4096  
ReadTimeout 500  
ReceivedBytesThresh 1  
RtsEnable False  
StopBits One  
WriteBufferSize 2048  
WriteTimeout 500

2. Click on the USB-to-Serial Port

Operation Parameters

Color Mode ☒ Mono ☐ RGB 8 bit Color

“@W” and “@L” are not the AT command. They are Special commands for this console only

Ind...	Cmd C...	Param Format	Description
1	@W	@Wx	Pause x ms
2	@L	@Lp	Send the specified picture at [ p ] to the module, p is the fu...
3	80	AT80=(line,column,Character)	Write a 5X7 Character
4	81	AT81=(line,column,String)	Write a 8X8 String
5	82	AT82=(line,column,Character)	Write a 8X16 Character
6	83	AT83=(line,column,String)	Write a 8X16 String
7	84	AT84=(X position,Y position,pattern ID)	Display a 8X8 pattern
8	85	AT85=(X position,Y position,pattern ID)	Display a 8X16 pattern
9	86	AT86=(X position,Y position,pattern ID)	Display a 16X16 pattern
10	87	AT87=(X position,Y position,pattern ID)	Display a 32X32 pattern
11	90	AT90=(X0 position,Y0 position,X1 position,Y1 posi...	Draw a line
12	91	AT91=(X0 position,Y0 position,X1 position,Y1 posi...	Draw a Rectangle
13	92	AT92=(X0 position,Y0 position,X1 position,Y1 posi...	Draw a filled Rectangle
14	93	AT93=(X position,Y position,Width,0 or 1)	Draw a Square
15	94	AT94=(X position,Y position,Width,0 or 1)	Example: AT94(64,32,1,30) Draw a Circle
16	95	AT95=(X position,Y position,Width,0 or 1)	Draw a filled Circle
17	96	AT96=(X position,Y position,Height,0 or 1)	Draw a tip upward Triangle
18	97	AT97=(X position,Y position,Height,0 or 1)	Draw a filled tip upward Triangle
19	98	AT98=(X position,Y position,Height,0 or 1)	Draw a tip downward Triangle
20	99	AT99=(X position,Y position,Height,0 or 1)	Draw a filled tip downward Triangle
21	9a	AT9a=(X position,Y position,Width,0 or 1)	Draw a tip leftward Triangle
22	9b	AT9b=(X position,Y position,Width,0 or 1)	Draw a filled tip leftward Triangle
23	9c	AT9c=(X position,Y position,Width,0 or 1)	Draw a tip rightward Triangle
24	9d	AT9d=(X position,Y position,Width,0 or 1)	Draw a filled tip rightward Triangle
25	9e	AT9e=(X position,Y position)	Set a pixel for positive display(show pixel)
26	9f	AT9f=(X position,Y position)	Set a pixel for negative display(clear pixel)

AT Command List:  
double clicks the AT Comm example , It will show up that command in the AT Command Mode window

BaudRate  
這個序列埠要使用的傳輸速率。

urCommander

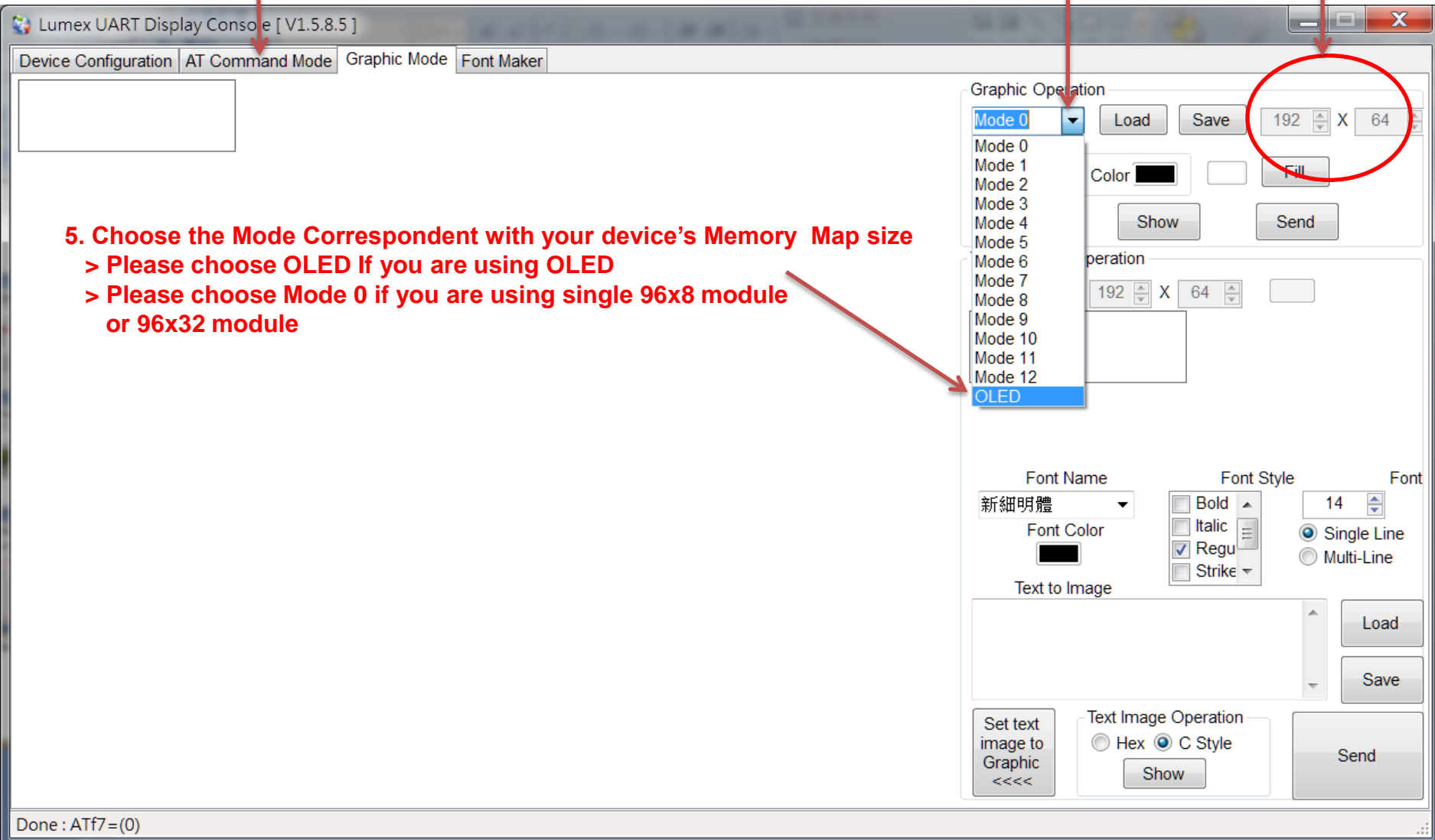
# Device configuration

6. Click on the Graphic Mode Tab to switch to AT Command window

4. Click here to pop out the Mode selection List

Memory size correspond to Each mode

5. Choose the Mode Correspondent with your device's Memory Map size  
> Please choose OLED If you are using OLED  
> Please choose Mode 0 if you are using single 96x8 module or 96x32 module



# AT Command Window Operation

Click this button will add one blank command line below for user to type in the AT command manually

**Data log of the command operation**

Index	Time	In/Out	Data
1	2016/9/28 上午 ...	Out	Done : AT+T7=(0)
2	2016/9/28 上午 ...	Out	Done : AT+f7=(13)
3	2016/9/28 上午 ...	Out	Done : ATf7=(0)

**Click to run this AT command once**

**If user double clicks the AT command in "Device Configuration" window, it will pop out the command here automatically. User just need to change the description to real data.**

**Click this button will add one blank command line below for user to type in the AT command manually**

Buttons: Load, Append New Command, Clear All, Batch Send, delay 5, Loop send, Cancel, Save.

Index	Commands	Send
<input type="checkbox"/> 1	AT83=(line,column,String)	<input type="button" value="T"/>
<input type="checkbox"/> 2		<input type="button" value="T"/>

There are 2 Commands

# AT Command Window Operation

Instead of click the 'T' button to run once on every click.  
It can run in batch mode by click "Batch send" button

**Device Configuration** | **AT Command Mode** | Graphic Mode | Font Maker

Index	Time	In/Out	Data
1	2016/9/28 上午 ...	Out	Done : ATf7=(0)
2	2016/9/28 上午 ...	Out	Done : ATf7=(13)
3	2016/9/28 上午 ...	Out	Done : ATf7=(0)
4	2016/9/28 上午 ...	Out	Done : Start the Batch Send process !
5	2016/9/28 上午 ...	Out	Done : atd0=()
6	2016/9/28 上午 ...	Out	Done : at81=(0,0,123456789)
7	2016/9/28 上午 ...	Out	Done : atd0=()
8	2016/9/28 上午 ...	Out	Done : at91=(0,0,95,7,1)
9	2016/9/28 上午 ...	Out	@ : Extra delay 2000ms is Done
10	2016/9/28 上午 ...	Out	Done : atd0=()
11	2016/9/28 上午 ...	Out	Done : at81=(0,0,Lumex UART Display)
12	2016/9/28 上午 ...	Out	@ : Extra delay 3000ms is Done
13	2016/9/28 上午 ...	Out	Done : atd4=(50)

C:\Users\Administrator.77UDZQCSMCYTKIC\Desktop\UrComm

Load | **Append New Comman** | Clear All | **Batch Send** | delay 5 | Loop send ☐ | Cancel

Index	Commands	Send
<input checked="" type="checkbox"/> 1	atd0=()	T
<input checked="" type="checkbox"/> 2	at81=(0,0,123456789)	T
<input checked="" type="checkbox"/> 3	atd0=()	T
<input checked="" type="checkbox"/> 4	at91=(0,0,95,7,1)	T
<input checked="" type="checkbox"/> 5	@W2000	T
<input checked="" type="checkbox"/> 6	atd0=()	T
<input checked="" type="checkbox"/> 7	at81=(0,0,Lumex UART Display)	T
<input checked="" type="checkbox"/> 8	@W3000	T
<input checked="" type="checkbox"/> 9	atd4=(50)	T

Done : atd4=(50)

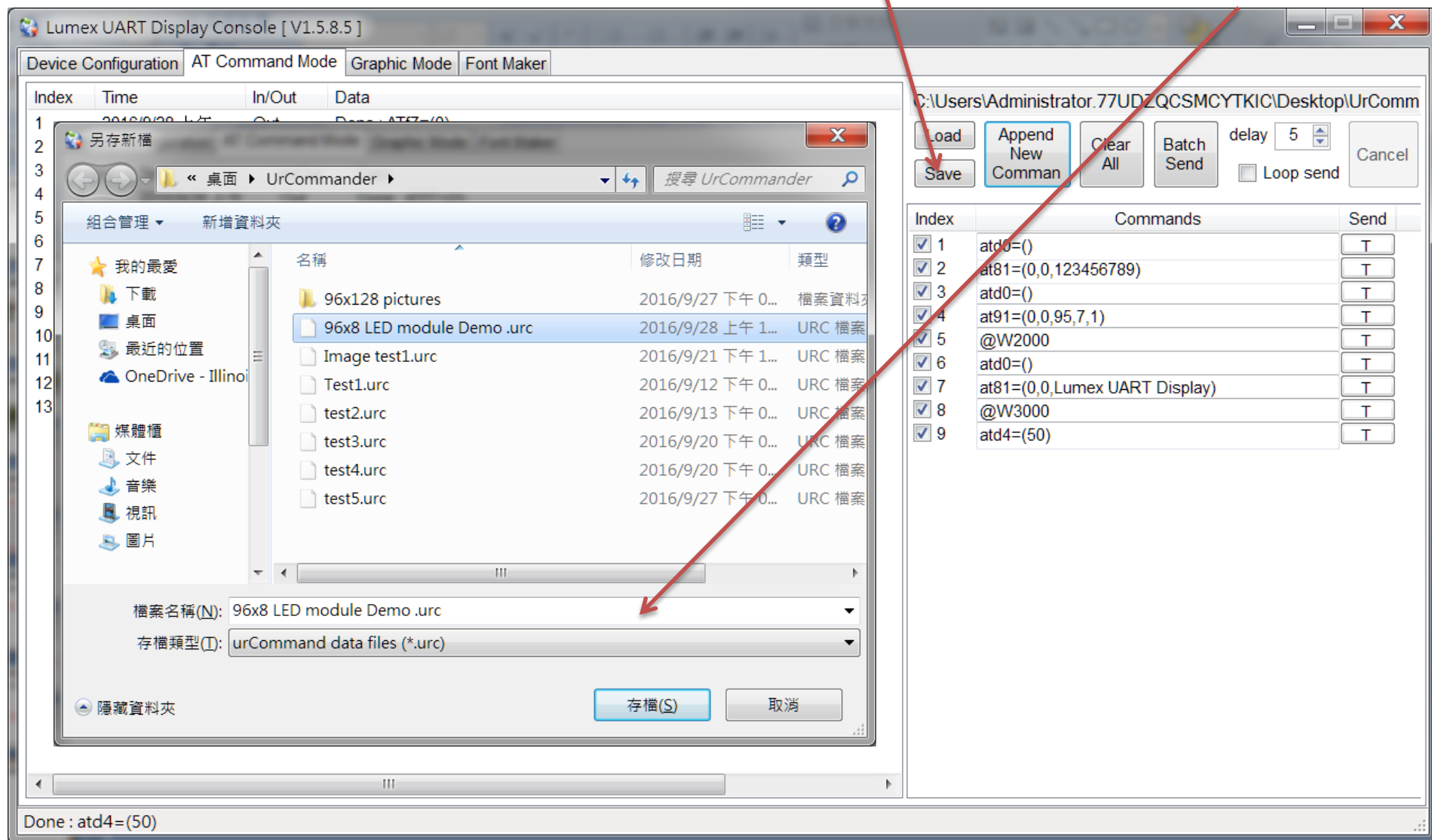
**Check the index box to select which command will be part of Batch send**

**Edit the commands list here**



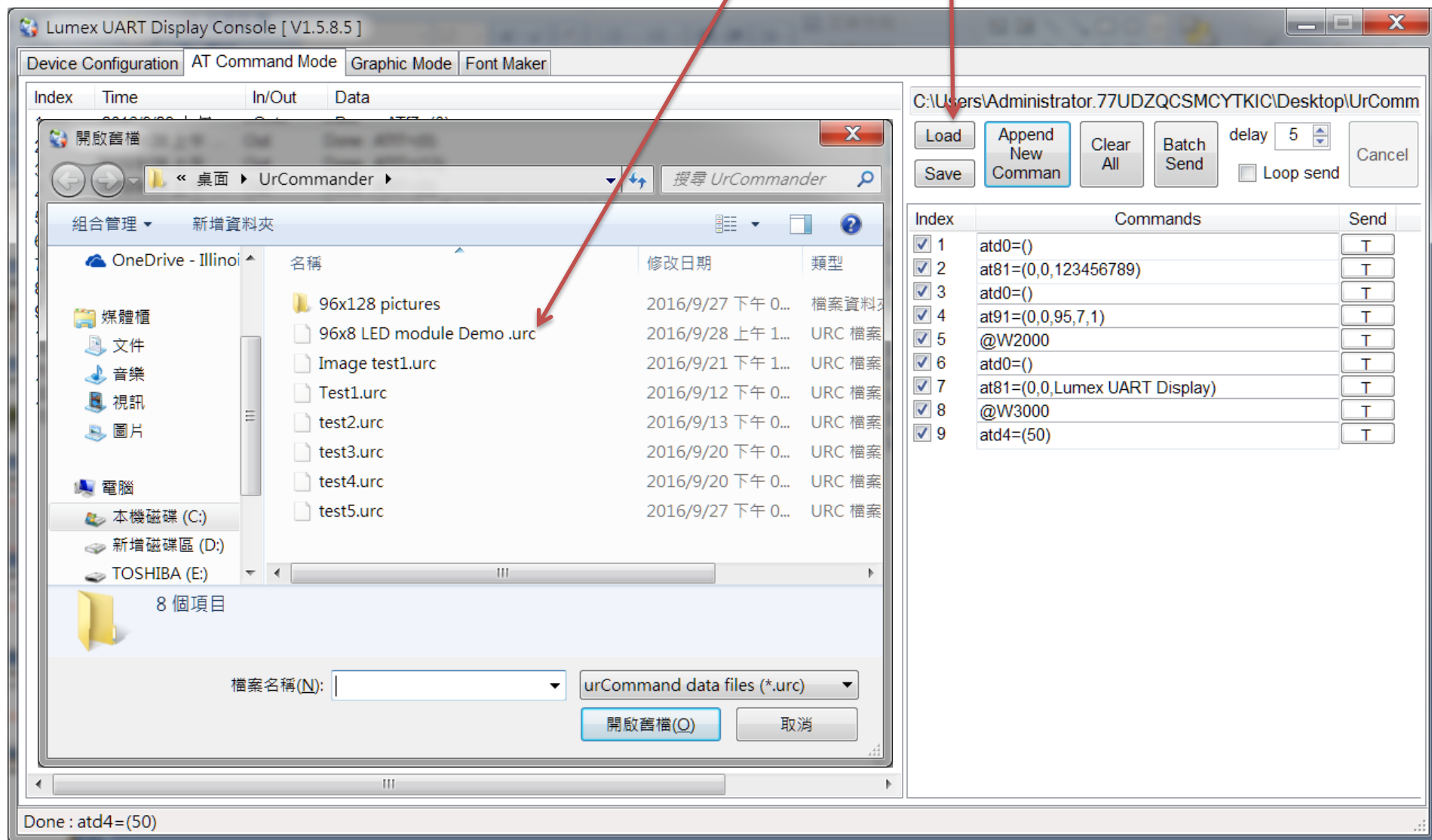
# AT Command Window Operation

Batch send can be save for re-use next time by clicking the “Save” button, a save window will pop out . The extension name of batch file is default as .urc



# AT Command Window Operation

You can load the pre-defined batch file (with .urc extension name) into AT command list by clicking the "Load" button



# AT Command Window Operation

User can make the batch sent run in indefinitely loop by check the “Loop send” box then click on the “Batch sent” button

2

1

Lumex UART Display Console [ V1.5.8.5 ]

Device Configuration | AT Command Mode | Graphic Mode | Font Maker

Index	Time	In/Out	Data
1	2016/9/28 上午 ...	Out	Done : ATf7=(0)
2	2016/9/28 上午 ...	Out	Done : ATf7=(13)
3	2016/9/28 上午 ...	Out	Done : ATf7=(0)
4	2016/9/28 上午 ...	Out	Done : Start the Batch Send process !
5	2016/9/28 上午 ...	Out	Done : atd0=()
6	2016/9/28 上午 ...	Out	Done : at81=(0,0,123456789)
7	2016/9/28 上午 ...	Out	Done : atd0=()
8	2016/9/28 上午 ...	Out	Done : at91=(0,0,95,7,1)
9	2016/9/28 上午 ...	Out	@ : Extra delay 2000ms is Done
10	2016/9/28 上午 ...	Out	Done : atd0=()
11	2016/9/28 上午 ...	Out	Done : at81=(0,0,Lumex UART Display)
12	2016/9/28 上午 ...	Out	@ : Extra delay 3000ms is Done
13	2016/9/28 上午 ...	Out	Done : atd4=(50)
14	2016/9/28 上午 ...	Out	Done : Start the Batch Send process !
15	2016/9/28 上午 ...	Out	Done : atd0=()
16	2016/9/28 上午 ...	Out	Done : at81=(0,0,123456789)
17	2016/9/28 上午 ...	Out	Done : atd0=()
18	2016/9/28 上午 ...	Out	Done : at91=(0,0,95,7,1)
19	2016/9/28 上午 ...	Out	@ : Extra delay 2000ms is Done
20	2016/9/28 上午 ...	Out	Done : atd0=()
21	2016/9/28 上午 ...	Out	Done : at81=(0,0,Lumex UART Display)
22	2016/9/28 上午 ...	Out	@ : Extra delay 3000ms is Done

C:\Users\Administrator.77UDZQCSMCYTKIC\Desktop\UrComm

Load Append New Command Clear All Batch Send delay 5 Loop send Cancel

Index	Commands	Send
<input checked="" type="checkbox"/> 1	atd0=()	T
<input checked="" type="checkbox"/> 2	at81=(0,0,123456789)	T
<input checked="" type="checkbox"/> 3	atd0=()	T
<input checked="" type="checkbox"/> 4	at91=(0,0,95,7,1)	T
<input checked="" type="checkbox"/> 5	@W2000	T
<input checked="" type="checkbox"/> 6	atd0=()	T
<input checked="" type="checkbox"/> 7	at81=(0,0,Lumex UART Display)	T
<input checked="" type="checkbox"/> 8	@W3000	T
<input checked="" type="checkbox"/> 9	atd4=(50)	T

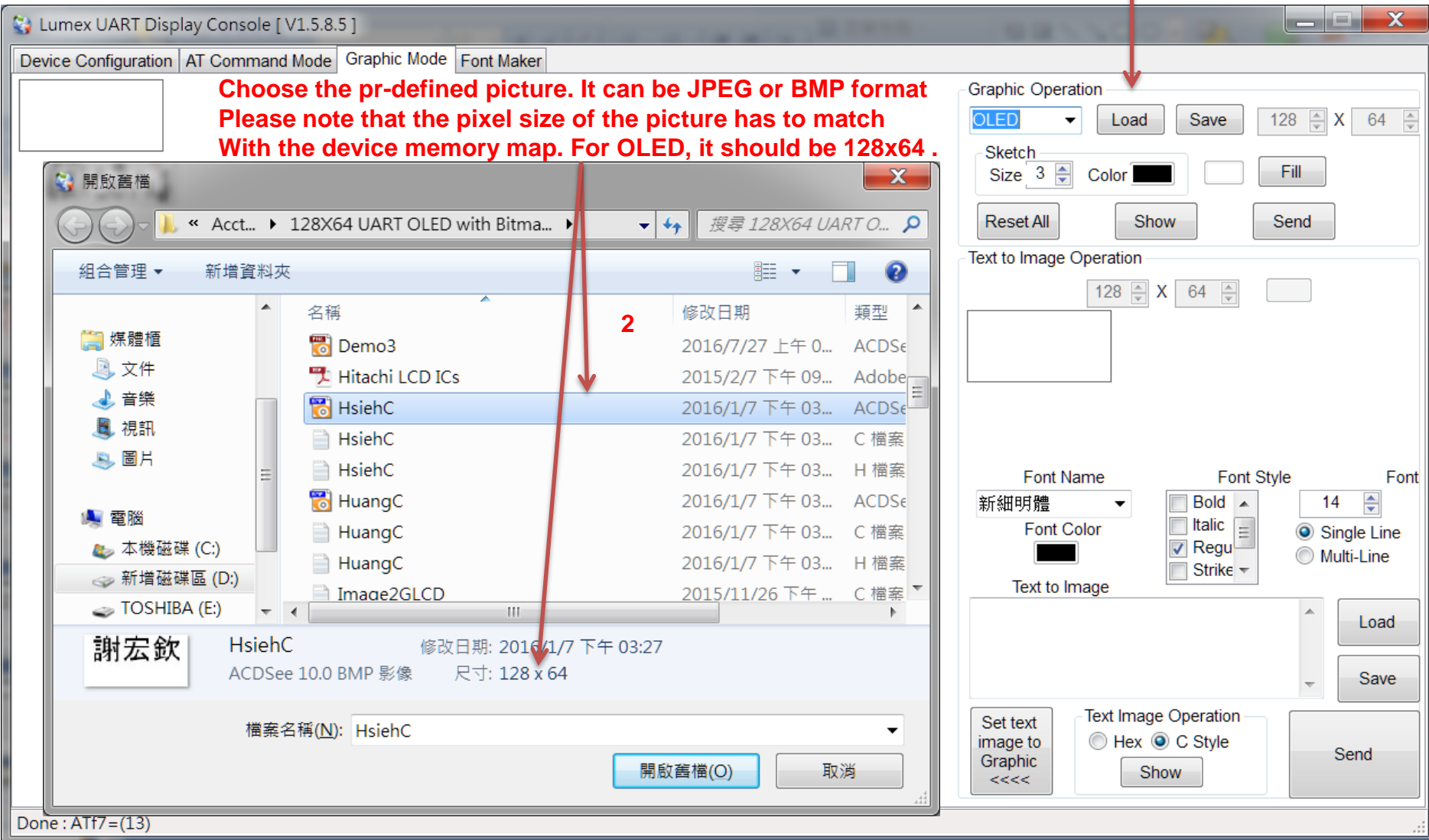
@ : Extra delay 3000ms is Done

User can stop the indefinitely loop by clicking on the “Cancel” button

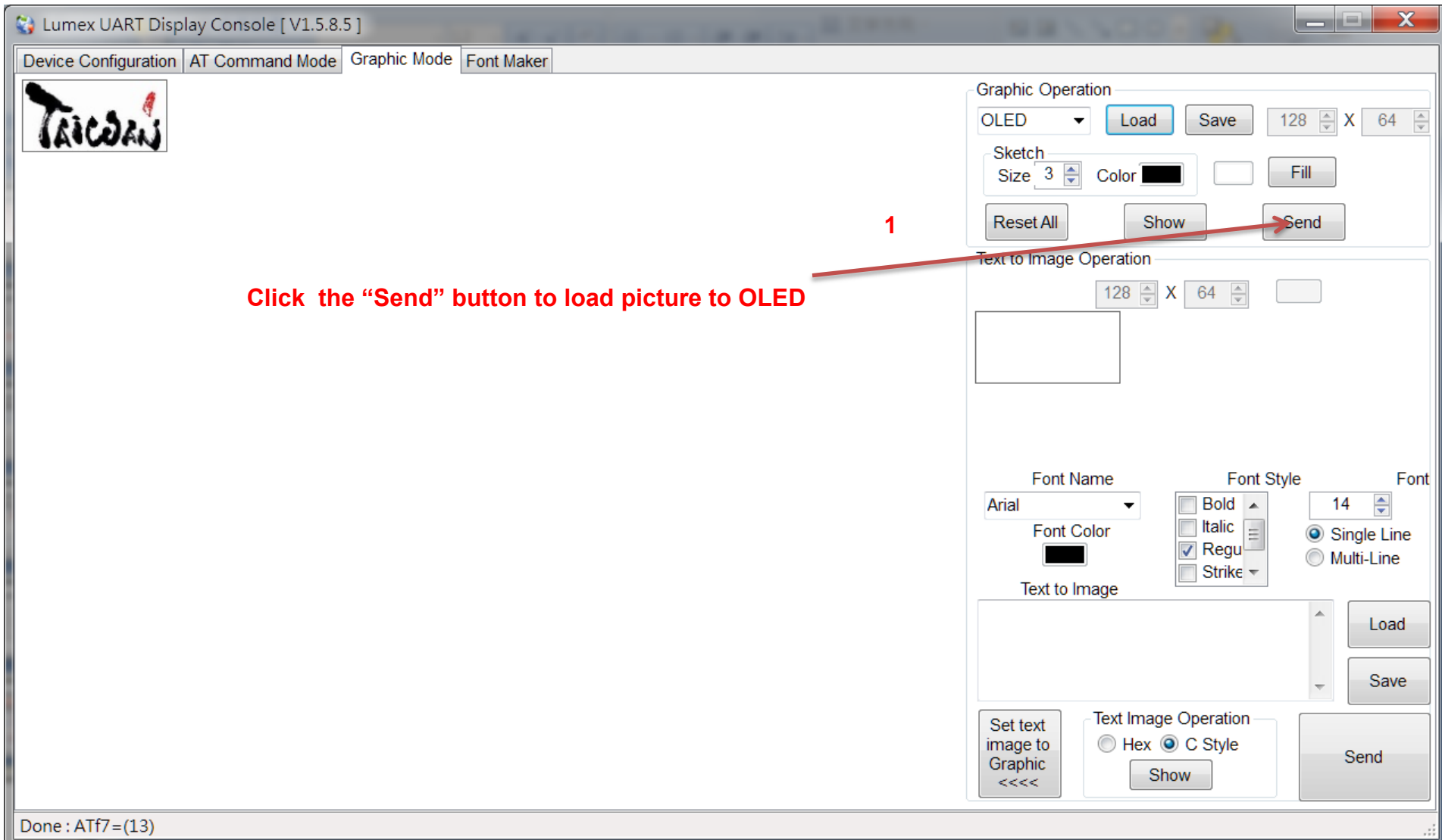
# Graphic Mode Operation Using OLED as example -1

Click the "Load" button to load picture to OLED, a window will pop out

Choose the pre-defined picture. It can be JPEG or BMP format  
Please note that the pixel size of the picture has to match  
With the device memory map. For OLED, it should be 128x64.




# Graphic Mode Operation Using OLED as example -1



# Graphic Mode Operation Using OLED as example 2

Lumex UART Display Console [ V1.5.8.5 ]

Device Configuration | AT Command Mode | **Graphic Mode** | Font Maker



**This Text to image function can edit the different languages and fonts and send it to device as image** →

**2** →

**The image will show her to reflect the display memory that is going to send to OLED**

**1** →

**Edit the fonts or characters in here**

**3** →

**Click the “Send” button to send the Image**

**Graphic Operation**

OLED Load Save 128 X 64

Sketch  
Size 3 Color Fill

Reset All Show Send

**Text to Image Operation**

128 X 64

Lumex  
UART  
Display

Font Name Arial Font Color

Font Style  
☒ Bold  
☐ Italic  
☐ Regu  
☐ Strike

Font 14  
☒ Single Line  
☐ Multi-Line

Text to Image

Lumex  
UART  
Display

Load Save

Set text image to Graphic <<<<

Text Image Operation  
☐ Hex ☒ C Style Show

Send

# : [Send Graph] Operation is Done

# Graphic Mode Operation Using OLED as example -3

This Text to image function and Graphic operation can mix to form more complex image

Step 5: Click on the "Send" button to display the image

**Step 1:** Load a image as example 2 but don't click on "send" button yet

**Step 2:** Edit the font you want to combine with the loaded image

**Step 3:** One click left mouse button on the "Set text image to Graphic" button (Please note , don't hold the mouse button , just one click)

**Step 4:** Move the mouse cursor to the image area , the font will show up , move around the mouse inside the image area then one click on the mouse left button, the font will fix in that location

**Step 5:** Click on the "Send" button to display the image

Current Position : X( 125 ) , Y( 47 )



# How to load and send an image under AT command mode

User can load the images in the AT command window by using the “@L” command .  
Please noted that the “@L” and @W are not AT command. Itthey can only been used in this console.

“@W” is to define the delay time before the next command executes. The unit is in mini second

The screenshot shows the Lumex UART Display Console [V1.5.9.0] in AT Command Mode. The main window displays a table of commands and their execution status. A file selection dialog is open, showing the contents of the 'UART interface 768 LED module ...' directory. The dialog lists several files, including 'Lumex Taiwan 192X64 ACDSSee 10.0 BMP 影像' (1.56 KB) and 'Lumex Taiwan ACDSSee 10.0 BMP 影像' (1.06 KB). The file 'Lumex Taiwan 192X64' is selected. The dialog also shows the file's modification date (2016/8/23 下午 01:11) and size (192 x 64). The file name 'Lumex Taiwan 192X64' is entered in the '檔案名稱(N):' field. The '開啟舊檔(O)' button is highlighted.

Index	Time	In/Out	Data
202	2016/10/10 下午...	Out	Done : atd2=(30)
203	2016/10/10 下午...	Out	Done : atd4=(30)
204	2016/10/10 下午...	Out	Done : atd2=(30)

Index	Commands	Send
<input checked="" type="checkbox"/> 1	atd4=(30)	<input type="button" value="T"/>
<input checked="" type="checkbox"/> 2	atd2=(30)	<input type="button" value="T"/>
<input type="checkbox"/> 3	atf2=(11)	<input type="button" value="T"/>
<input type="checkbox"/> 4	@W1000	<input type="button" value="T"/>
<input type="checkbox"/> 5	@L	<input type="button" value="T"/>

There are 5 Commands



# How to perform an animation under AT command mode

User can load images as many as they want and run under batch send mode to create the animation by using the “@L” command, “@W” can be used to adjust the image refresh time

The screenshot shows the Lumex UART Display Console [ V1.5.9.0 ] window. The 'AT Command Mode' tab is selected. The left pane displays a log of commands and responses. The right pane shows a list of commands to be sent in batch mode.

Index	Time	In/Out	Data
202	2016/10/10 下午...	Out	Done : atd2=(30)
203	2016/10/10 下午...	Out	Done : atd4=(30)
204	2016/10/10 下午...	Out	Done : atd2=(30)
205	2016/10/10 下午...	Out	Done : atd4=(30)
206	2016/10/10 下午...	Out	Done : atd2=(30)
207	2016/10/10 下午...	Out	Done : atd4=(30)
208	2016/10/10 下午...	Out	Done : atd2=(30)
209	2016/10/10 下午...	Out	Done : atd4=(30)
210	2016/10/10 下午...	Out	Done : atd2=(30)
211	2016/10/10 下午...	Out	Done : atd4=(30)
212	2016/10/10 下午...	Out	Done : atd2=(30)
213	2016/10/10 下午...	Out	Done : atd4=(30)
214	2016/10/10 下午...	Out	Done : atd2=(30)
215	2016/10/10 下午...	Out	Done : atd4=(30)
216	2016/10/10 下午...	Out	Done : atd2=(30)
217	2016/10/10 下午...	Out	Done : atd4=(30)
218	2016/10/10 下午...	Out	Done : atd2=(30)
219	2016/10/10 下午...	Out	Done : atd4=(30)
220	2016/10/10 下午...	Out	Done : atd2=(30)
221	2016/10/10 下午...	Out	Done : atd4=(30)
222	2016/10/10 下午...	Out	Done : atd2=(30)
223	2016/10/10 下午...	Out	Done : atd4=(30)
224	2016/10/10 下午...	Out	Done : atd2=(30)
225	2016/10/10 下午...	Out	Done : atd4=(30)
226	2016/10/10 下午...	Out	Done : atd2=(30)
227	2016/10/10 下午...	Out	Done : atd4=(30)
228	2016/10/10 下午...	Out	Done : atd2=(30)
229	2016/10/10 下午...	Out	Done : atd4=(30)

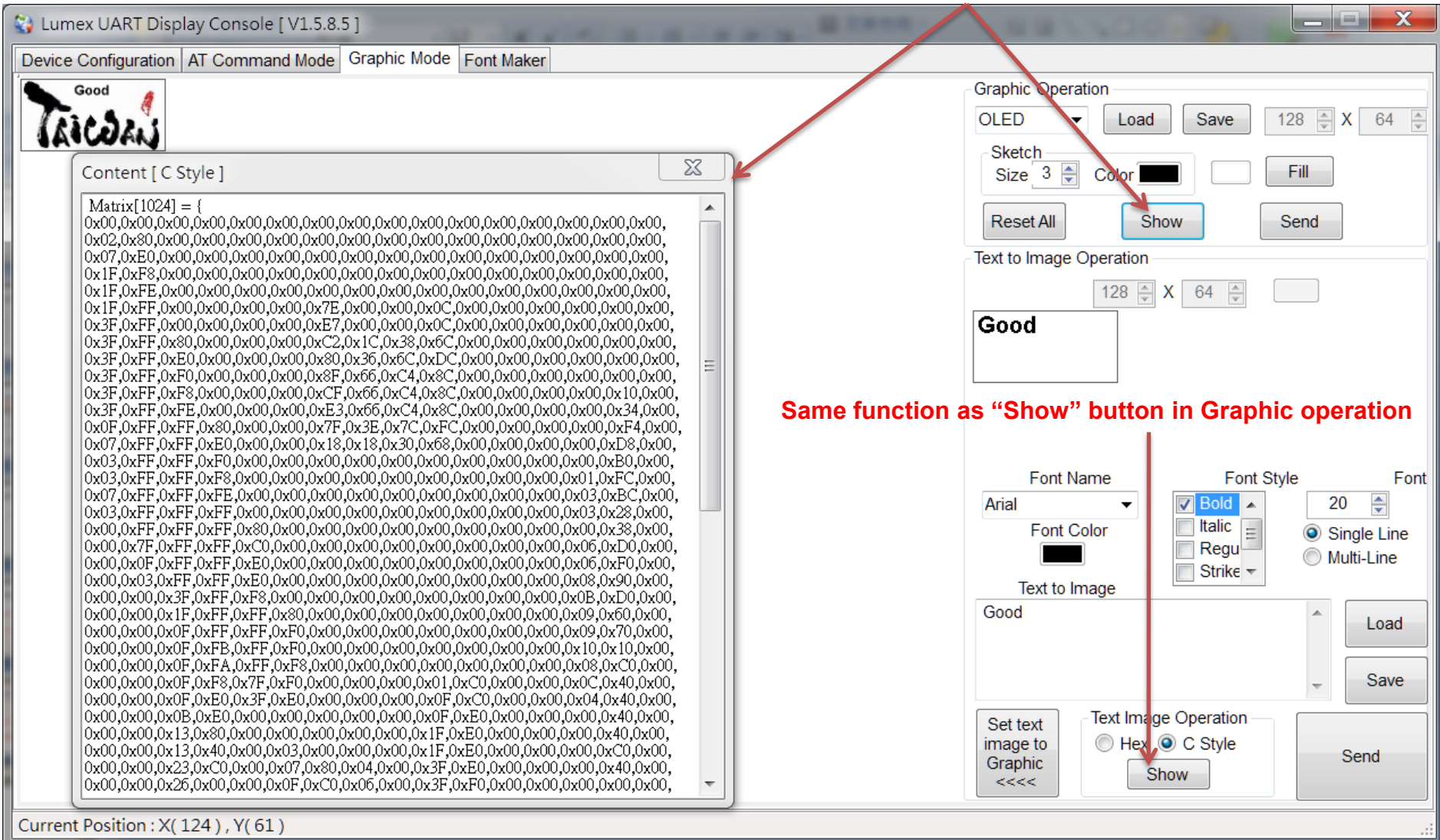
There are 10 Commands

Index	Commands	Send
<input type="checkbox"/> 1		<input type="button" value="T"/>
<input type="checkbox"/> 2		<input type="button" value="T"/>
<input type="checkbox"/> 3		<input type="button" value="T"/>
<input type="checkbox"/> 4		<input type="button" value="T"/>
<input checked="" type="checkbox"/> 5	@LD:\ARM Projects\Accton Rs-232 LCM\UART i	<input type="button" value="T"/>
<input checked="" type="checkbox"/> 6	@w100	<input type="button" value="T"/>
<input checked="" type="checkbox"/> 7	@LD:\ARM Projects\Accton Rs-232 LCM\UART i	<input type="button" value="T"/>
<input type="checkbox"/> 8	@w100	<input type="button" value="T"/>
<input type="checkbox"/> 9	@LD:\ARM Projects\Accton Rs-232 LCM\UART i	<input type="button" value="T"/>
<input type="checkbox"/> 10	@w100	<input type="button" value="T"/>

Buttons: Load, Append New Comman, Clear All, Batch Send, Save, delay 5, Loop send (checked), Cancel.

## MCU (Using OLED as example -4)

**Click on the “Show” button a window will pop out. User can copy and paste the text form image matrix to their IDE to apply on MCU**



# How the Font maker works?

Same function as “Show” button in Graphic operation

Lumex UART Display Console [ V1.5.8.5 ]

Device Configuration | AT Command Mode | Graphic Mode | **Font Maker**

32 X 32

Character : M

Clear

Font Operation

☐ Hex ☒ C Style

Show

Font Name: Arial

Font Size: 16

Font Style: ☒ Bold, ☐ Italic, ☐ Regular, ☐ Strikeout

Content [ C Style ]

```
Matrix[128] = {
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x0E,0x0E,0x00,0x00,0x0F,0x1E,0x00,0x00,0x0F,0x1E,0x00,0x00,0x0D,0x16,0x00,0x00,
0x0D,0xB6,0x00,0x00,0x0D,0xB6,0x00,0x00,0x0D,0xB6,0x00,0x00,0x0C,0xE6,0x00,0x00,
0x0C,0xE6,0x00,0x00,0x0C,0xE6,0x00,0x00,0x0C,0x46,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,
0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00,0x00
}
```

User can type in the font in here , or edit the pixel by clicking the left mouse button (set ) or click right mouse button (erase)

Click on the “Show” button a window will pop out. User can copy and paste the text form image matrix to their IDE to apply on MCU

Current Position : X( 124 ) , Y( 61 )