



SPECIFICATIONS

CUSTOMER : _____
MODEL NO. : **GFRU20X4-SERIES**
VERSION : **C**
DATE : **2013.12.18**
CERTIFICATION : **ROHS**

Customer Sign	Approved By	Prepared By	Prepared By

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GI FAR TECHNOLOGY CO.,LTD

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Revision Record

Data(y/m/d)	Ver.	Description	Note	page
2013.06.14	A	Specification released		
2013.11.20	B	修改程式		7、8
2013.12.18	C	圖面增加 DC JACK 定義 (S1 要短路)		3



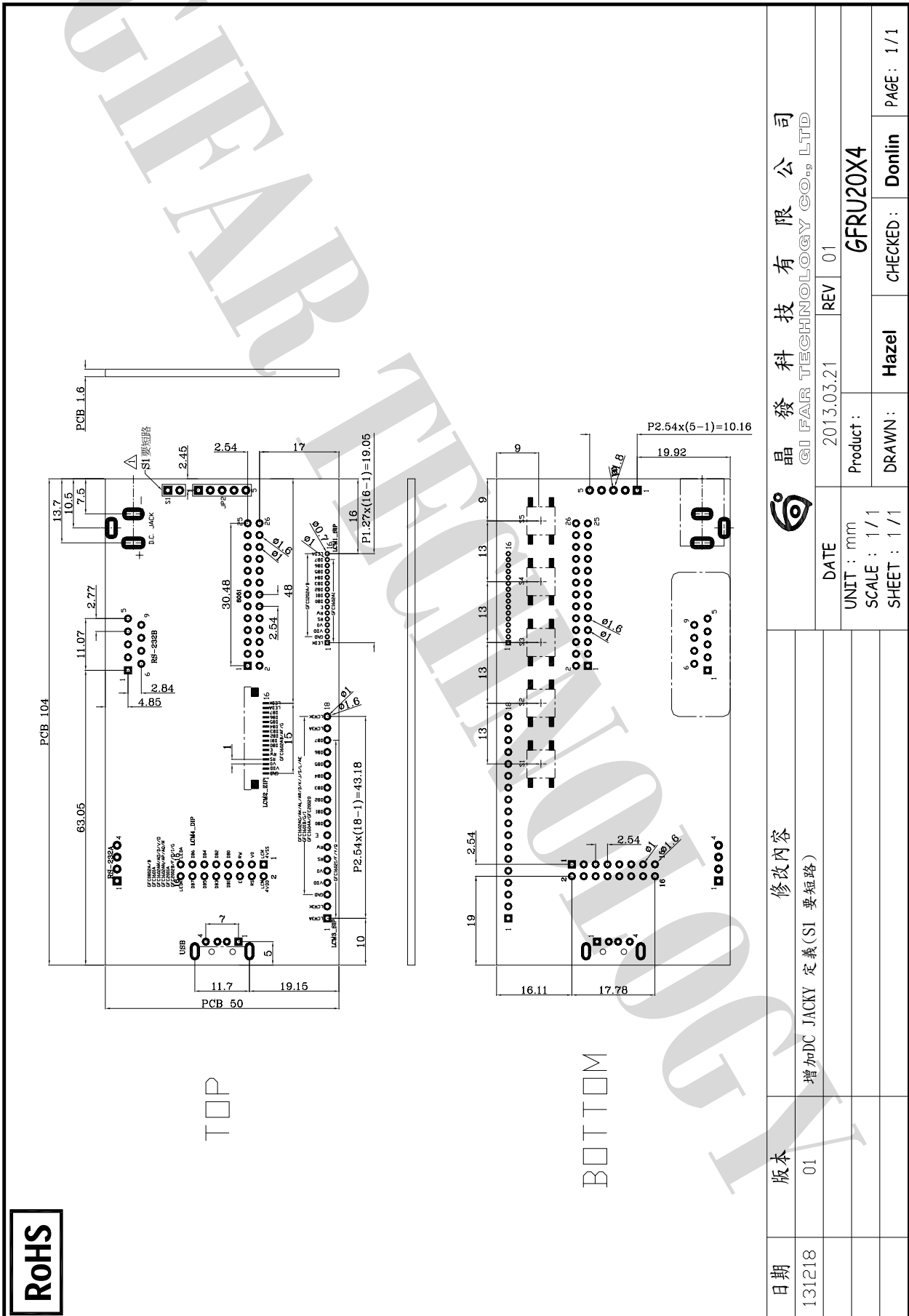
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Test Board Dimension





1. Features.

- i. Interface : USB(1.0/2.0) / RS232 (Baudrate:19200)
- ii. Supports Gifar Monochrome Character LCD module with resolution below: 08x02 / 12x2 / 16x01 / 16x02 /16x04 / 20x01 / 20x02.
- iii. Supports five external Keypad controls.
- iv. Customized service is also available!
- v. The sample order release includes:
 - 1) samples (this board & the LCD module)
 - 2) specification
 - 3) testing software: "COMDemo".

2. Mechanical Specifications

Item	Value	Unit
Module dimension	104(W) X 50(H)	mm
Connection to LCM	PIN Header //	

3. Absolute Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
Power supply Voltage	VDD	-	--	5.2	V
Operating temperature	TOPR	-	-20	70	°C
Storage temperature	TSTG	-	-30	80	°C
Static electricity	Be sure that you are grounded when handing LCM				



4. Interface Pin Description

Connector USB

No	Signal
1	VDD
2	D-
3	D+
4	GND

Connector RS232A

No	Signal
1	VDD
2	RXD
3	TXD
4	GND

Connector RS232B

No	Signal	No	Signal
1	NC	6	NC
2	RXD	7	NC
3	TXD	8	NC
4	NC	9	NC
5	GND		

Keypad Mapping (further provide after resting)

Keypad	Character Return
S1	" A " (0x41h)
S2	" B " (0x42h)
S3	" C " (0x43h)
S4	" D " (0x44h)
S5	" E " (0x45h)
S6	" F " (0x46h)

Keypad character return.



Mono Character LCM Connector

LCM1-SIP1.27mm

GFC1202A - Series

GFC1202B - Series

GFC1602AI - Series

LCM2-ZIF1.0mm

GFC1602AB - Series

GFC1602AF - Series

GFC1602G - Series

LCM3-SIP2.54mm

GFC1602AG - Series	GFC1602AR - Series	GFC1602J - Series	GFC1602AE - Series
GFC1602AK - Series	GFC1602D - Series	GFC1602S - Series	GFC1602I - Series
GFC1602AL - Series	GFC1602K - Series	GFC1602L - Series	GFC1602F - Series
GFC1602Y - Series	GFC1602Q - Series	GFC1604A - Series	GFC2002D - Series
GFC1601B - Series	GFC1601G - Series	GFC1601I - Series	

LCM4-DIP2.54mm

GFC0802A - Series	GFC0802B - Series	GFC1602AM - Series	GFC1602AO - Series
GFC1602D - Series	GFC1602V - Series	GFC1602O - Series	GFC1602AN - Series
GFC1602AP - Series	GFC1602AQ - Series	GFC1602M - Series	GFC2001A - Series
GFC2002B - Series	GFC2002F - Series	GFC2002O - Series	GFC2002I - Series
GFC2002G - Series	GFC1601A - Series		



6. Command Summary

Command	Syntax	Default	Description
Auto line wrap on	FE 43 FD	on	Enables line wrapping. Character will wrap to first position of next line if it reaches the end of a line.
Auto line wrap off	FE 44 FD	N/A	Disables line wrapping. Character will go to the first position of the original line if it reaches the end of a line.
Set text insertion point	FE 47 [col] [row] FD	N/A	Sets the text insertion point to [col] and [row]. [col] : 0x00 to 0x13 [row] : 0x00 to 0x01
Set text insertion point home	FE 48 FD	N/A	Sets the text insertion point to [0] and [0].
Underline cursor on	FE 4A [col] [row] FD	N/A	Turns on the underline cursor and sets it at location [col] and [row]. [col] : 0x00 to 0x13 [row] : 0x00 to 0x01
Underline cursor off	FE 4B FD	N/A	Turns off the underline cursor.
Blinking Block cursor on	FE 59 [col] [row] FD	N/A	Turns on the blinking block cursor and sets it at Location [col] and [row]. [col] : 0x00 to 0x13 [row] : 0x00 to 0x01
Blinking Block cursor off	FE 5A FD	N/A	Turn off the blinking block cursor.
Cursor left	FE 4C FD	N/A	Moves the underline cursor to left. It will move to the end of the same line if it reaches the beginning of a line
Cursor right	FE 4D FD	N/A	Moves the underline cursor to right. It will move to the beginning of the same line if it reaches the end of a line
Initial thick vertical bar graph	FE 76 FD	N/A	Initializes 5 pixels width as the vertical bar.
Initial thin vertical bar graph	FE 73 FD	N/A	Initializes 2 pixels width as the vertical bar.
Draw vertical bar graph	FE 3D [col] [height] FD	N/A	Draws vertical bar at position [col] of the last row with height [height]. [col] : 0x00 to 0x13 [height] : 0x00 to 0x10
Erase vertical bar graph	FE 2D [col] FD	N/A	Erases vertical bar at position [col]. [col] : 0x00 to 0x13
Initialize horizontal bar graph	FE 68 FD	N/A	Initialize horizontal bar graph.
Draw horizontal bar graph	FE 7C [col] [row] [len] FD	N/A	Draws horizontal bar at position [col] and [row] With length [length]. [length] ranges from [0x00] to [0x7A].
Read Model Number	FE 30 FD	N/A	Reads 2 bytes back from LCD



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Read Firmware Version	FE 31 FD	N/A	Reads 2 bytes back from LCD
Soft Reset	FE 56 FD	N/A	Resets
Clear display	FE 58 FD	N/A	Clears screen of LCD and places the text insertion point to top left.
Backlight on	FE 42 FD	on	Turns on the backlight.
Backlight off	FE 46 FD	N/A	Turns off the backlight.
Backlight brightness	FE 41 [brightness] FD	N/A	Adjust LED brightness. [brightness] : 0x01 to 0x08.
Auto key hold on	FE 32 FD	N/A	Auto key hold on.
Auto key hold off	FE 33 FD	N/A	Auto key hold off.
Set RS232 port speed	FE 39 [speed] FD	19200	Sets RS232 port speed. [speed] : 0x00 to 0x06 0x00 = 115200 0x01 = 57600 0x02 = 38400 0x03 = 19200 0x04 = 9600 0x05 = 4800 0x06 = 2400
Save user defined characters	FE 4F [cc] FD	N/A	Save user defined characters. [cc] : 0x01 to 0x08..
Define custom character	FE 4E [cc] [8 bytes] FD	N/A	Defines custom character. [cc] : 0x01 to 0x08.
Load user defined characters	FE 50 [cc] FD	N/A	Load user defined characters. [cc] : 0x01 to 0x08.
Save user settings	FE 53 [4 bytes] FD	N/A	Save user settings. User is required to save 4 bytes at a time.
Read user settings	FE 54 FD	N/A	Read user settings. 4 bytes are returned at each time
Save custom startup screen	FE 40 [bb] [8bytes] FD	N/A	Save custom startup characters. [bb] for LCM0802 : 0x00 to 0x01 [bb] for LCM1202 : 0x00 to 0x02 [bb] for LCM1602 : 0x00 to 0x03 [bb] for LCM2002 : 0x00 to 0x04
Set LCM for 16x02	FE 34 FD	16x02	Set LCM for 16x02
Set LCM for 20x02	FE 35 FD	N/A	Set LCM for 20x02
Set LCM for 12x02	FE 36 FD	N/A	Set LCM for 12x02
Set LCM for 08x02	FE 37 FD	N/A	Set LCM for 08x02

** Keypad S1+S4 show RS232 port speed



7.RELIABILITY

Test item	Test condition	Evaluation and assessment
Operation at high temperature and humidity	40 °C±2 °C 90%RH for 500hours	No abnormalities in functions* and appearance**
Operation at high temperature	60 °C±2 °C for 500 hours	No abnormalities in functions* and appearance**
Heat shock	-20± ~ +60 °C Left for 1 hour at each temperature, transition time 5 min, repeated 10times	No abnormalities in functions* and appearance**
Low temperature	-20±2 °C for 500 hours	No abnormalities in functions* and appearance**
Vibration	Sweep for 1 min at 10 Hz, 55Hz, 10Hz, amplitude 1.5mm 2 hrs each in the X,Y and Z directions	No abnormalities in functions* and appearance**
Drop shock	Dropped onto a board from a height of 10cm	No abnormalities in functions* and appearance**

* Dissipation current, contrast and display functions

** Polarizing filter deterioration, other appearance defects

7.1 Liquid crystal panel service life
100,000 hours minimum at 25 °C±10 °C

7.2 definition of panel service life

- Contrast becomes 30% of initial value
- Current consumption becomes three times higher than initial value
- Remarkable alignment deterioration occurs in LCK cell layer
- Unusual operation occurs in display functions



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Licence No: TA1062-QC-EC

Model	pin	LCM Outline	
GFC0802A GFC0802B	2x7	58x32	
GFC1202A GFC1202B	1x15	55.7x32	
GFC1601A	2x8	151x40	
GFC1601B	1x16	80x36	
GFC1601G	1x16	80x36	



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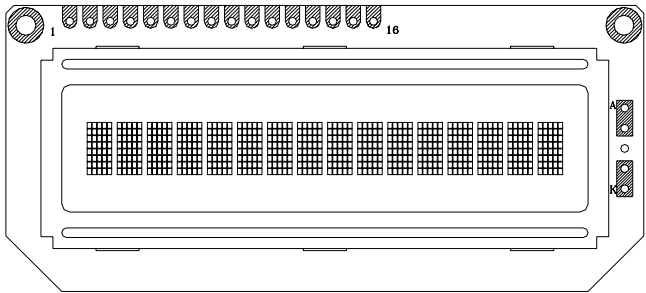
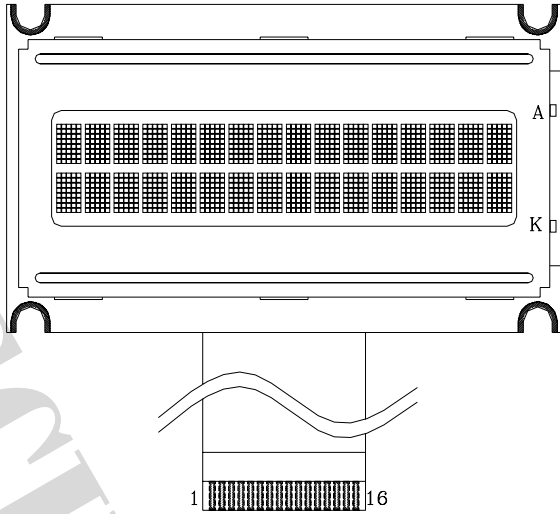
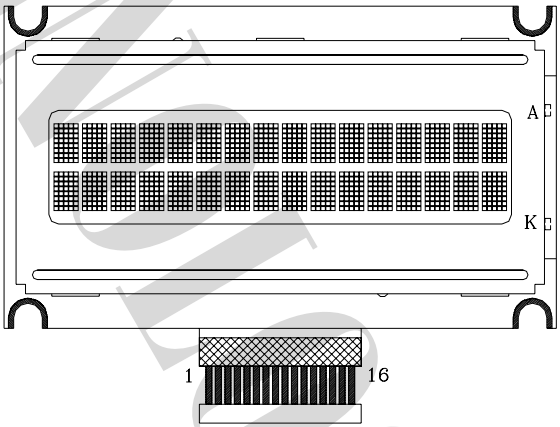
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<p>GFC1601I</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602AB</p>	<p>FPC - 1x16</p>	<p>58x34</p>	
<p>GFC1602AB-02</p>	<p>FPC - 1x16</p>	<p>58x34</p>	



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GFC1602AB-03	1x16	58x34	
GFC1602D	2x8 / 1x16	85x36	
GFC1602F	1x16	122x44	
GFC1602G	FPC - 1x16	53x20	



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<p>GFC1602I</p>	<p>1x16</p>	<p>122x44</p>	
<p>GFC1602J</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602K</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602L</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602M</p>	<p>2x7</p>	<p>85x30</p>	



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GFC1602O	2x8	85.2x36.2	
GFC1602Q	1x16	84x44	
GFC1602S	1x22	67.4x31	
GFC1602V	2x8	85x36	
GFC1602Y	1x16	84x44	



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<p>GFC1602AE</p>	<p>1x16</p>	<p>100x38.8</p>	
<p>GFC1602AF</p>	<p>FPC - 1x16</p>	<p>69x29.2</p>	
<p>GFC1602AG</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602AI</p>	<p>1x15</p>	<p>75.5x26</p>	
<p>GFC1602AJ</p>	<p>FPC - 1x16</p>	<p>70x23.3</p>	



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<p>GFC1602AK</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602AL</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC1602AM</p>	<p>2x7</p>	<p>85x30</p>	
<p>GFC1602AN</p>	<p>2x8</p>	<p>85x30</p>	
<p>GFC1602AO</p>	<p>2x7</p>	<p>85x30</p>	



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GFC1602AP	2x7	85x28	
GFC1602AQ	2x7	80x25.2	
GFC1602AR	1x16	80x36	
GFC1604A	1x16	87x60	
GFC2001A	2x8	180x40	



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<p>GFC2002B</p>	<p>2x8</p>	<p>115x36</p>	
<p>GFC2002D</p>	<p>1x16</p>	<p>80x36</p>	
<p>GFC2002F</p>	<p>2x8</p>	<p>116x37</p>	
<p>GFC2002G</p>	<p>2x7</p>	<p>85x30</p>	



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<p>GFC2002I</p>	<p>2x8</p>	<p>180x40</p>	
<p>GFC2002J</p>	<p>1x16</p>	<p>146x43</p>	
<p>GFC2002O</p>	<p>2x8</p>	<p>180x40</p>	
<p>GFC2002P</p>	<p>2x12</p>	<p>72x32</p>	