20x4 LCD Smartie Asset User's Guide

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NOTES:

Product Version : Ver 1.0

Document Version : Ver 1.0

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Chapter 1. Overview

1.1 Overview

Thanks for using this 2004 LCD Smartie Asset by Sure Electronics. It features an easy-to-install aluminum alloy housing which makes this product shapely and durable to be used in many applications. It's also populated with a mirror screen which blocks your eyes from seeing the inside but ensuring perfect display effect when the item is powered.

Its basic functions include displaying system information of your computer, such as Everest status, MBM status (Your CPU temperature, fan/cooler speed, etc.), BBC world news (or any other RSS feeds), WinAmp status (currently playing tracks title, length, position, etc), network status (speed, total bytes, etc), CPU speed, free disk space, memory usage, E-mail details, game status and many others. Features like ambient temperature display, conversion between ℃and ℉, feedback current LCD contrast ratio, backlight brightness level, tips function and product info are added. In addition, users may adjust the contrast ratio of LCD display and backlight brightness.

FIGURE 1-1 OVERVIEW

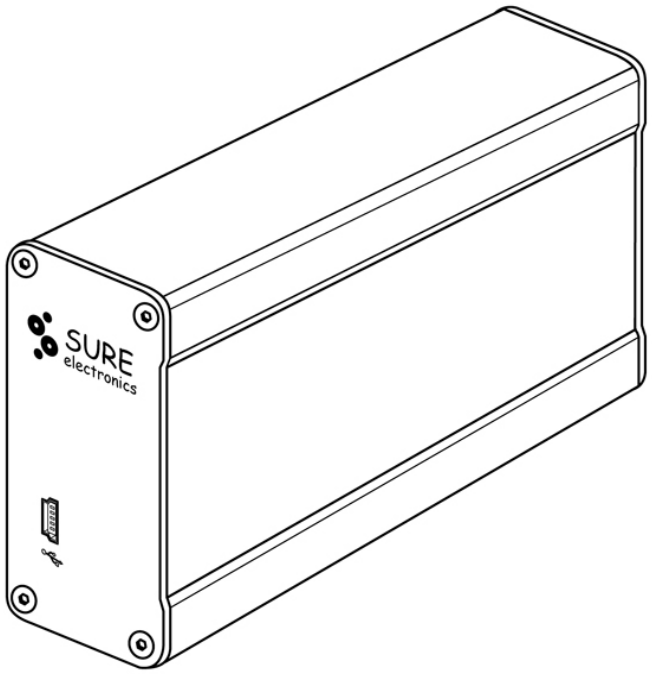

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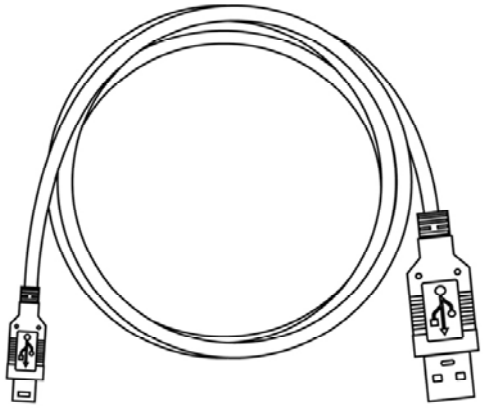
FIGURE 1-2 ACCESSORY



1.2 Quick Start

1.2.1 Installation

First, install LCD Smartie application, Sure-LCD 1.1 and CP2102 driver. All of them are available on the following links:

LCD_smartie_v5.4:

http://www.sureelectronics.net/drivers/lcd_smartie_v5.4.zip

Sure-LCD V1.1

http://www.sure-electronics.net/download/Sure-LCD_1.0.zip

CP2102 driver:

http://www.sureelectronics.net/goods.php?id=393.

1.2.2 Connection

Connect LCD Smartie and computer with mini USB cable like shown in figure 1-3. LCD will display the defaulted graphs like shown in figure 1-4.

FIGURE 1-3 SCHEMATIC OF CONNECTION WITH MINI USB

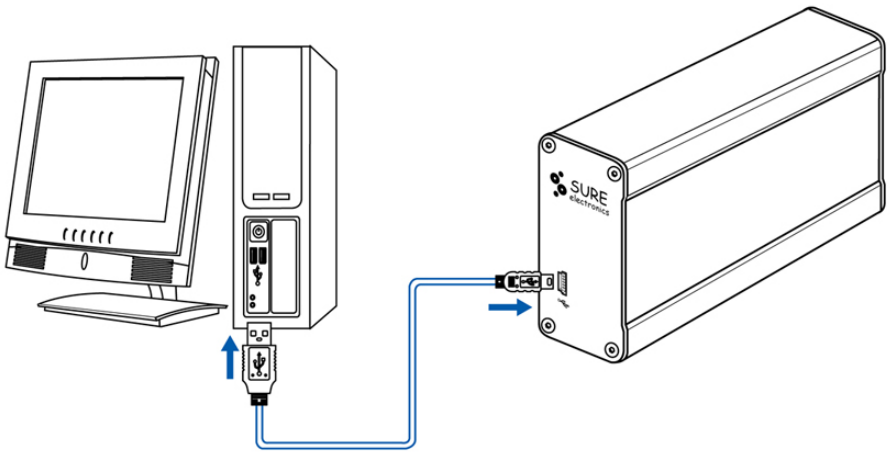


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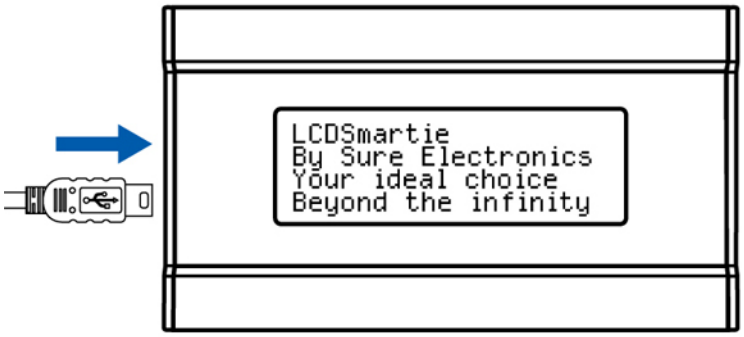
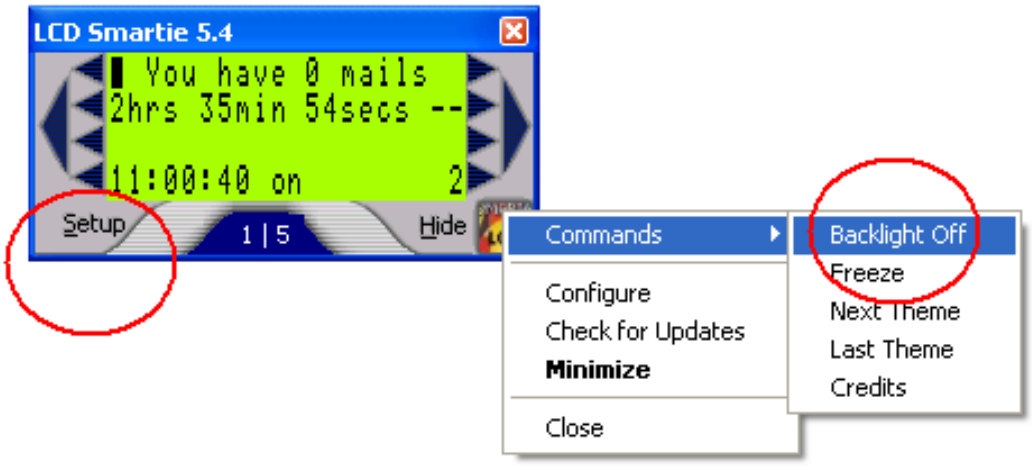
FIGURE 1-4 DIS[LAY SCHEMATIC AFTER POWER-UP



1.2.3 Run LCD Smartie

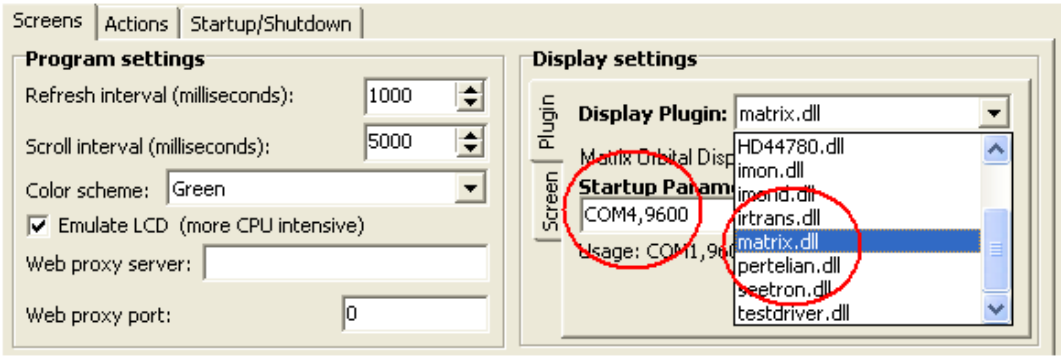
1. Click “Setup” at the lower left corner of the main page to perform the following configuration (as shown in figure 1-5)

FIGURE 1-5 SIMULATION DISPLAY INTERFACE



Select “matrix.dll” from the “Display Plugin” drop-down list under “Screens” tab. Fill the COM port name in “Startup Parameters” under “Display settings”, the communication speed is 9600bps (As shown in figure 1-6).

FIGURE 1-6 SELECT PLUG-IN AND FILL IN PORT NAME



Port name can be obtained by the following means: Right-click “My Computer” and locate “Silicon Labs CP210x USB to UART Bridge” after Properties→Hardware→Device Manager→Ports. The content in its following bracket is the port name.

Select “4x20” from the “LCD size” drop-down list under the “Screen” tab of Display Settings, as shown in figure 1-7. Click “OK” or “Apply” at the lower right-hand corner to enable communication. After that, the display on LCD will be consistent with what is being simulated with LCD Smartie.

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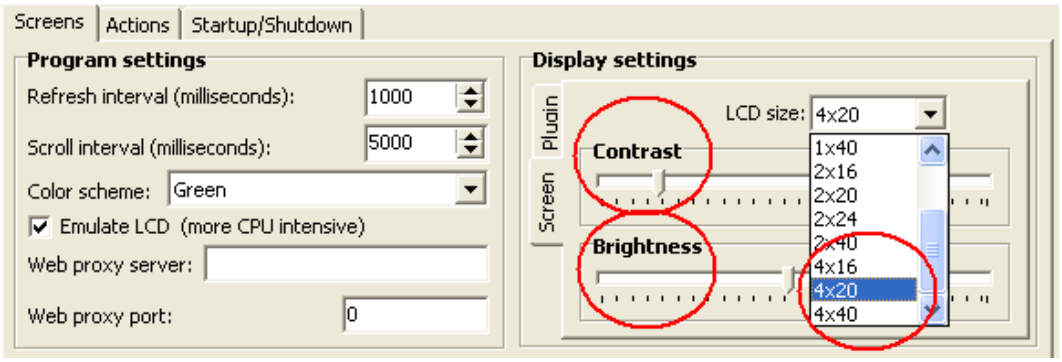
FIGURE 1-7 SELECT THE TYPE OF LCD DISPLAY



2. Other settings can be conducted after LCD functions normal.

To adjust the contrast ratio and brightness, just drag the slide bar.

To turn the backlight of LCD off, click the small icon at the lower right-hand corner and select “Commands”->”Backlight Off”, like shown in figure 1-5. With the same path, you can turn on the backlight again.

An example of how the time of PC is displayed. In the left task bar of LCD Smartie, highlight “Uptime short (days, hours, minutes)” first and click “Insert -->” button and “$UpTims” will appear in the place where cursor flashed, as shown in figure 1-8. Click “Apply” will make the LCD display the time of your PC system, as shown in figure 1-9.

FIGURE 1-8 SELECT THE CONTENTS TO BE DISPLAYED

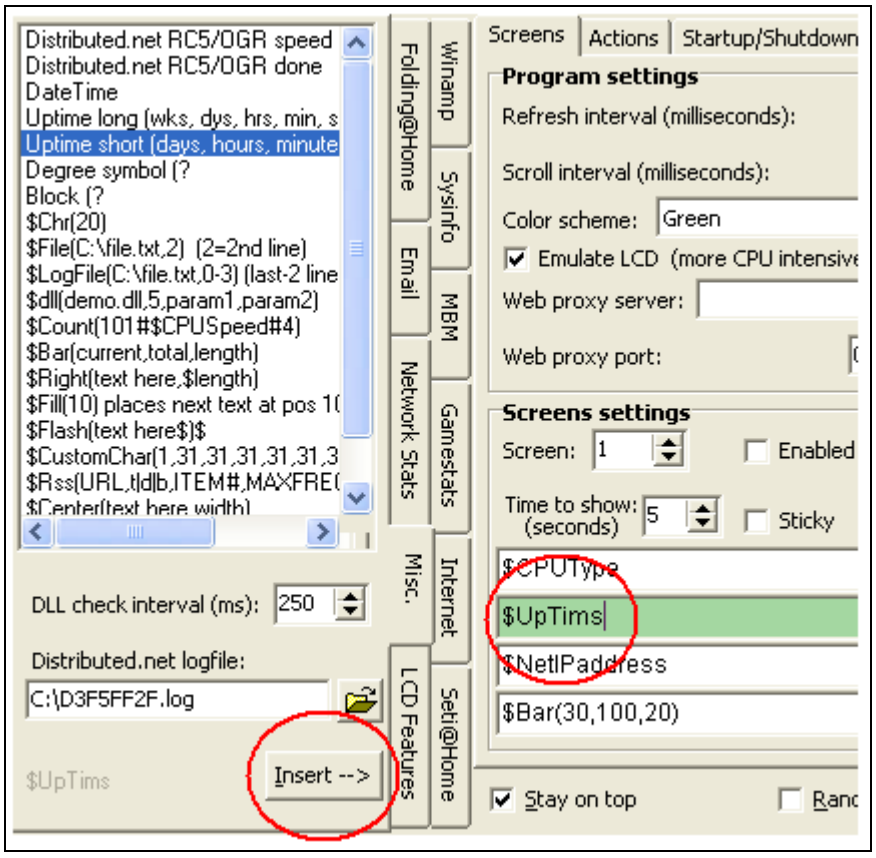


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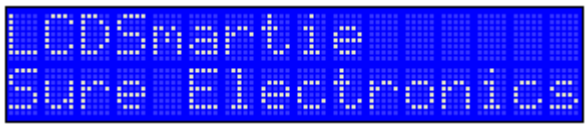
FIGURE 1-9 SIMULATION DISPLAY

1.2.4 Select Sure-LCD V1.0 As Your Application

1. If you select Sure-LCD V1.0 as your application, a 16×2 sized LCD simulator screen (blue backlight & white character) will pop up like shown in figure 1-10

FIGURE 1-10 A 16×2 SIZED LCD SIMULATOR SCREEN



2. Right-click the simulator and select “Config” in the popped up window and a configuration page will be displayed as shown in Figure 1-11. Select “4*20” from “LCD Size” drop-down list like shown in Figure 1-12 and a 20×4 sized simulator pops up like shown in Figure 1-13.

FIGURE 1-11 A CONFIGURATION PAGE

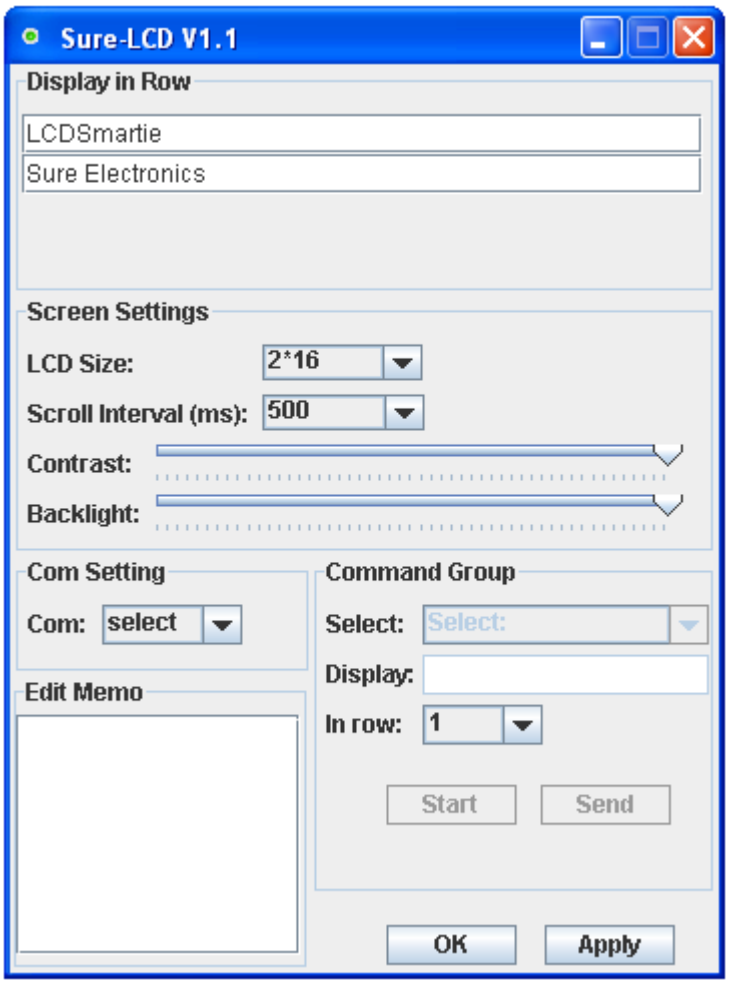


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FIGURE 1-12 LCD SIZE SELECTION

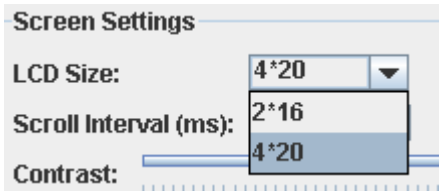
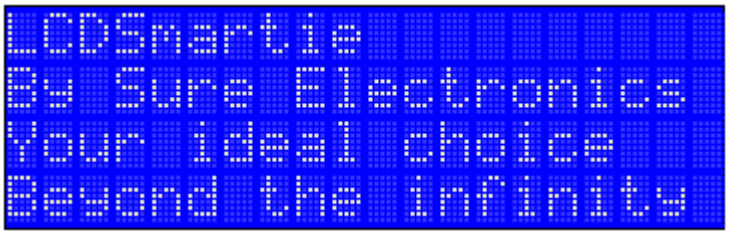


FIGURE 1-13 A 20×4 SIZED SIMULATOR



3. Select “Com3” from “Com” drop-down list of “Com Settings” and click “Start” button to establish a communication as shown in Figure 1-14. The content displayed here is for reference only.

FIGURE 1-14 ESTABLISH A COMMUNICATION

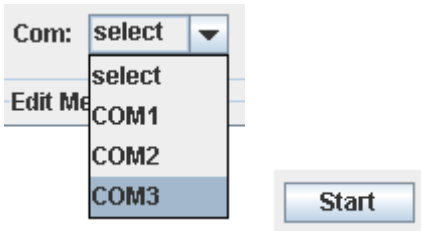
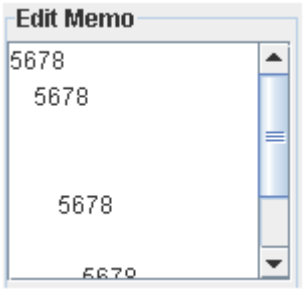


FIGURE 1-15 EDIT MEMO



4. The following is an example of how to use this application. Select command “About me” from “Select” drop-down list under “Command Group” and then click “Send” like shown in Figure 1-16. You will read from the simulator screen 20040202000 like shown in Figure1-17

FIGURE 1-16 SELECT COMMAND “ABOUT ME”

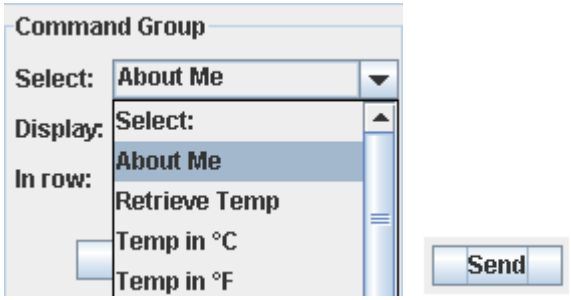


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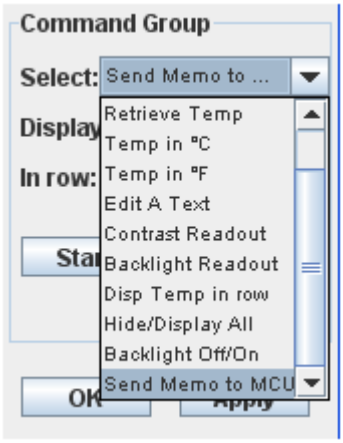
FIGURE 1-17 VERSION NUMBER

1.2.5 How to Use Tips Function

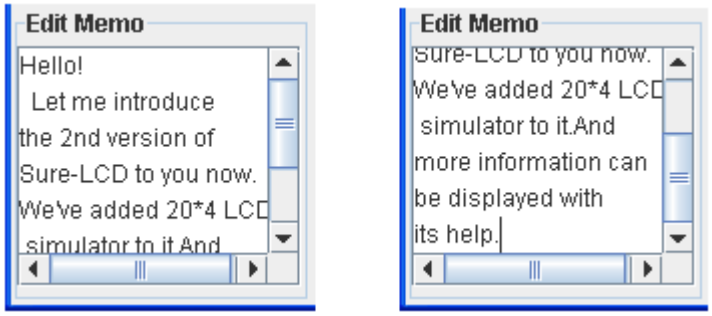
1. Firstly, select “Send Memo to MCU” from “Select” under “Command Group” as shown in Figure 1-18.

FIGURE 1-18 SELECT COMMANDS FOR TIPS EDIT



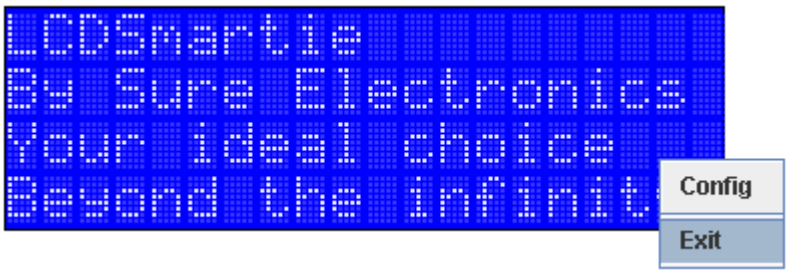
2. In the interface of “Edit Memo”, edit content of tips as shown in Figure 1-19 with entering maximum 20 letters (including spaces) in each row and 10 rows at most.

FIGURE 1-19 EDIT TIPS



3. Close the configuration page. Right-click the simulator screen and select “Exist” as shown in Figure 1-20. Tips will be displayed on LCD screen soon afterwards.

FIGURE1-20 TIPS WILL BE DISPLAYED ON LCD SCREEN



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The tips are displayed progressively and repeatedly like shown in Figure 1-21. The interval of adjacent contents is approximately 3 seconds. The last screen will last for about 10 seconds. When the content of tips doesn't exceed 4 rows, the content displayed will be automatically switched between defaulted power-on content and the tips.

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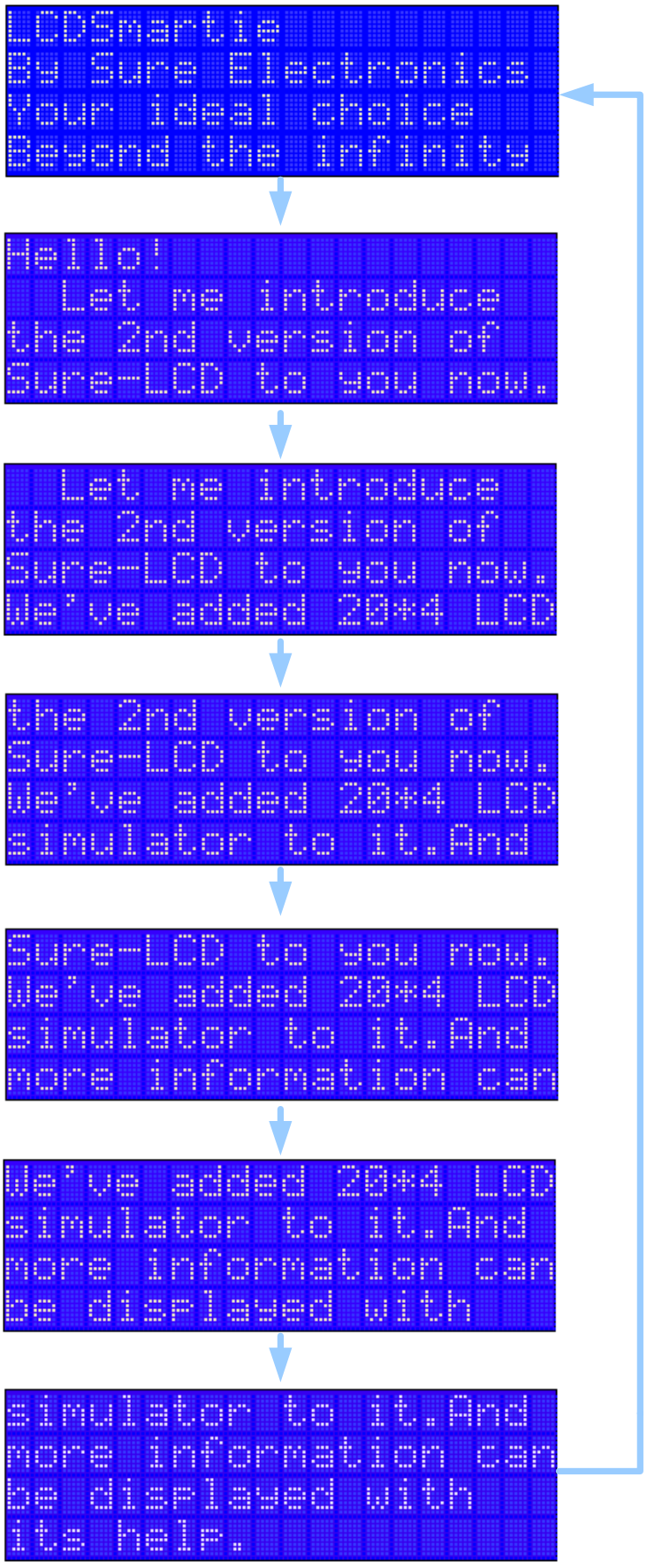
FIGURE 1-21 A FLOW SIMULATING THE DISPLAY OF TIPS



5. Restart LCD Smartie or Sure-LCD, tips display will end.

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Note: Figure 1-1- Figure1-21 are provided for reference only

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Chapter 2. Tips for Usage

1 If the contrast ratio, backlight brightness and displaying contents vary after running LCD Smartie application, it proves that LCD display has successfully received the info from LCD Smartie.

2 The backlight brightness can be adjusted only when the backlight is turned on. Otherwise, the backlight brightness cannot be adjusted once the backlight is turned off. LCD display will turn the backlight off upon receiving the command of "Turn backlight off" even when the communication is in progress. Therefore, the backlight brightness cannot be adjusted by the slider bar and users need to click "Backlight off" first and click "Backlight On" again. Please refer to item 4 in Quick Start for details.

3 Katakana will be displayed if the characters sent by your computer exceed the range of common ASCII code.

4 Please refer to http://lcdsmartie.sourceforge.net/ for more details about LCD Smartie.

5 Do not use LCD Smartie and Sure-LCD simultaneously.

6 Tips will not be displayed once the power is off. If you send newly-created tips to MCU, previous tips will be replaced.

7 You may refer to help of application for use of Sure-LCD.

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Chapter 3. Mechanical Drawing

FIGURE 4-1 MECHANICAL DRAWING OF THE HOUSING

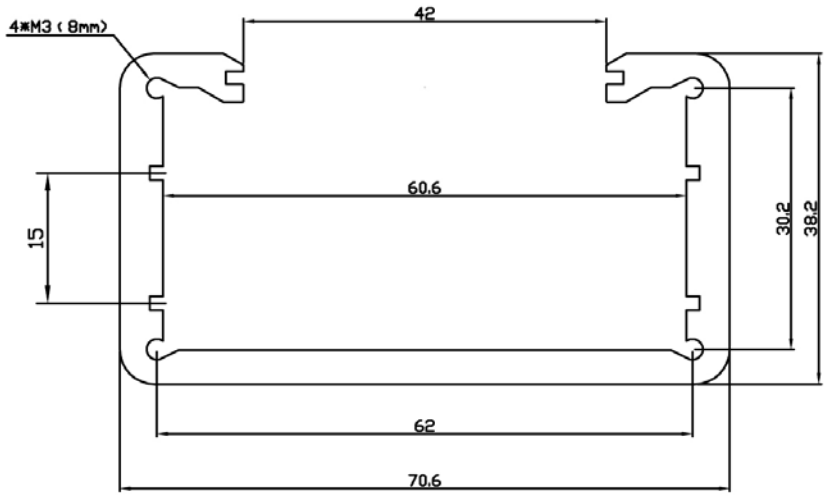

FIGURE 4-2 MECHANICAL DRAWING OF THE LEFT PANEL

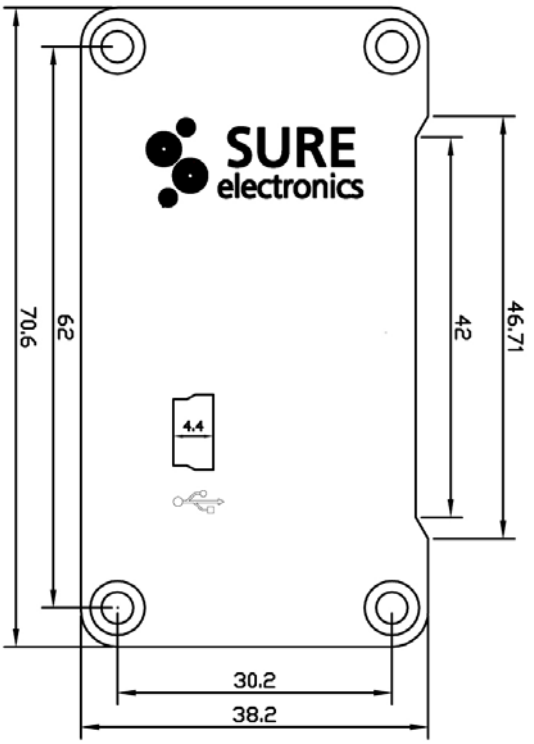

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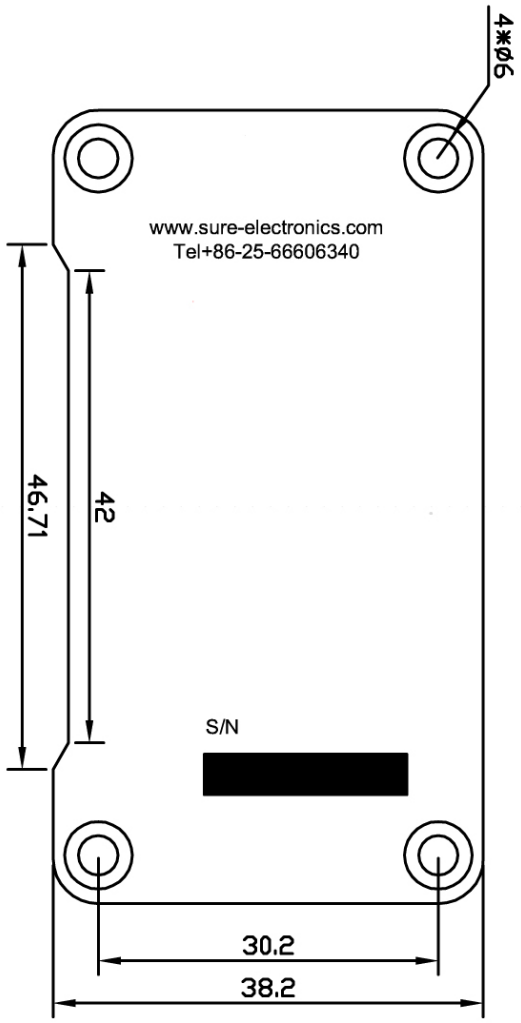
FIGURE 4-3 MECHANICAL DRAWING OF THE RIGHT PANEL



Note: The unit is mm.

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Chapter 4. Appendix

Command Set

No	Command to MCU	Command Description	MCU to PC	Applicable in	
				LCD Smartie	Sure-LCD
1	Started with 0xFE,0x47 ,0x01, i and followed by 20 characters (range of i is 0x01~0x04)	Display 20 characters that followed in row i of LCD	-	Y	Y
2	started with 0xFE,0x50 and followed by a hex ranging from 0x01~0xFE	Adjust LCD contrast ranging from 0x01~0xFE	-	Y	Y
3	started with 0xFE,0x98 and followed by a hex ranging from 0x01~0xFE	Adjust backlight brightness ranging from 0x01~0xFE	-	Y	Y
4	0xFE,0x46	Turn backlight off	-	Y	Y
5	0xFE,0x42,0x00	Turn backlight on (with the latest configuration)	-	Y	Y
6	Started with 0xFE,0x4E, i and followed by 8 hex numbers (range of i is 0~7)	Customize character pattern of 0~7CGRAM	-	Y	N
7	0xFE,0x63	Request MCU to send LCD contrast reading	CR 1~CR254 represents contrast values at different levels	N	Y
8	0xFE,0x62	Request MCU to send LCD backlight reading	BKLT 1~BKLT254 represents backlight brightness at different level	N	Y

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9	0xFE,0x76	Request MCU to send version number	**abcdpeltrrr** **abcd**:Indicates the size of LCD screen, e.g.: 1602, 2004 **P**: indicates whether RX8025 exists or not, 1 indicates yes, 0 indicates no and USB is adopted. 24C04 is only available in higher version. **e**: indicates the size of EEPROM, 2^n Kbit such as 2 indicates 2^2 Kbit, i.e. 4Kbit. **l**: indicates whether a photosensitive resistor exists or not, 0 indicates no, 1 indicates yes. **t**: indicates whether a thermal resistor (or LM75) exists or not. 0 indicates no, 1 indicates thermal resistor exists, 2 indicates LM75 exists. **rrr**: defaulted as 000, reserved	N	Y
10	0xFE,0x77	Request MCU to send temperature	**abc°d** **abc:** temperature reading. If the absolute value of the temperature is less than 99, “a” will be null, if less than 10, “b” will be null. “°” is degree. d is C or F, indicates centigrade and Fahrenheit. The returned value of temperature ranges from 0 to 60℃ (32 to 140℉). If the value is over the range, “Temp	N	Y

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			Out of Range" will be returned.		
11	Started with 0xFE,0x57 and followed by i (the range of i is 0x01~0x04)	display temperature in row i of LCD	Refer to 10 for the way of display, the contents will be aligned left when display, while the remaining is space e.g. Temp：26℃	N	Y
12	0xFE,0x53,0x75 0x72,0x65	Establish communication	-	N	Y
13	Started with 0xFE,0x48,0x01, i and followed by 16 or 20 characters (range of I is 0x01~0x0a in hex)	Save tips and simulate contents displayed in row i, the minimum of i is 0x02 in 16*2 LCD.	-	N	Y
14	Started with 0xFE,0x57 and followed by i (i is either 0x46 or 0x43)	Set temperature type: F: Fahrenheit C: centigrade	-	N	Y
15	0xFE,0x64	Turn LCD display ON or OFF	-	N	Y
16	0xFE,0x66	Close application and this command can also be used to start tips	-	N	Y

Note: Please enter start command (command in the 12th row) first after power-on, or other commands will not response to the ports.

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