



**INSTRUCTION MANUAL  
FOR  
AMCT-1  
REVISION NO: 1.1**

Customer's Approval:

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# 1. General Specification

The Character LCD Module Evaluation & Development Board (CLCM-E&D) has been designed for evaluating Character LCD modules without having to lay out your own PCB and design your software. It provides pinouts for the most popular modules in the industry. It will interface to most modules that use the industry-standard HD44780 controller (or equivalent), running in 8-bit or 4-bit mode (software select).

The CLCM-E&D uses an Atmel AT89C4051 processor to control the LCM and communication with the PC by RS232C. The custom can easily use yourself processor to drive the LCM with yourself progress.

# 2. Main Components On The CLCM-E&D

Main components in the CLCM-E&D

NO.	Symbol	Name	FUNCTION
1	/	Power Supply Interface	+5VDC(+/-5%) Power Supply for the board
2	/	Power Supply Switch	Turn on and turn off the Power Supply
3	LED	Power Light (red)	It be light when Power Supply be turned on
4	Current	Current Test Jump	Open it and connect to a multimeter to test the LCM current
5	RST	Reset	Reset for MCU
6	KEY2	Step Key	Press it once the LCM display a character in COM port not be connected
7	J1	V0 Select	Short 2~3 Pins of J1 when using internal V0, Open 2~3 Pins of J1 and solder you V0 to pin 2
8	J5	BL Power Supply Jump	Short it when using internal power for back light, Open it when using in external power for back light
9	J6	External Power Supply For Back Light	External Power Supply For Back Light, +5VDC
10	J15	Back Light Power Polarity Select	Select pin15 of D1 connect to A or K
11	J16	Back Light Power Polarity Select	Select pin15 of D1 connect to A or K
12	RS232C	RS232 Interface	Connect to PC COM port with cable

13	J4	Negative Voltage Select	Short 2~3 Pins of J4 when using internal Negative Voltage ; Short 2~1 Pins of J4 when using LCM Negative Voltage ( Pin 17 of S1 )
14		Trimmer Resistor	Adjust the contrast of the LCM

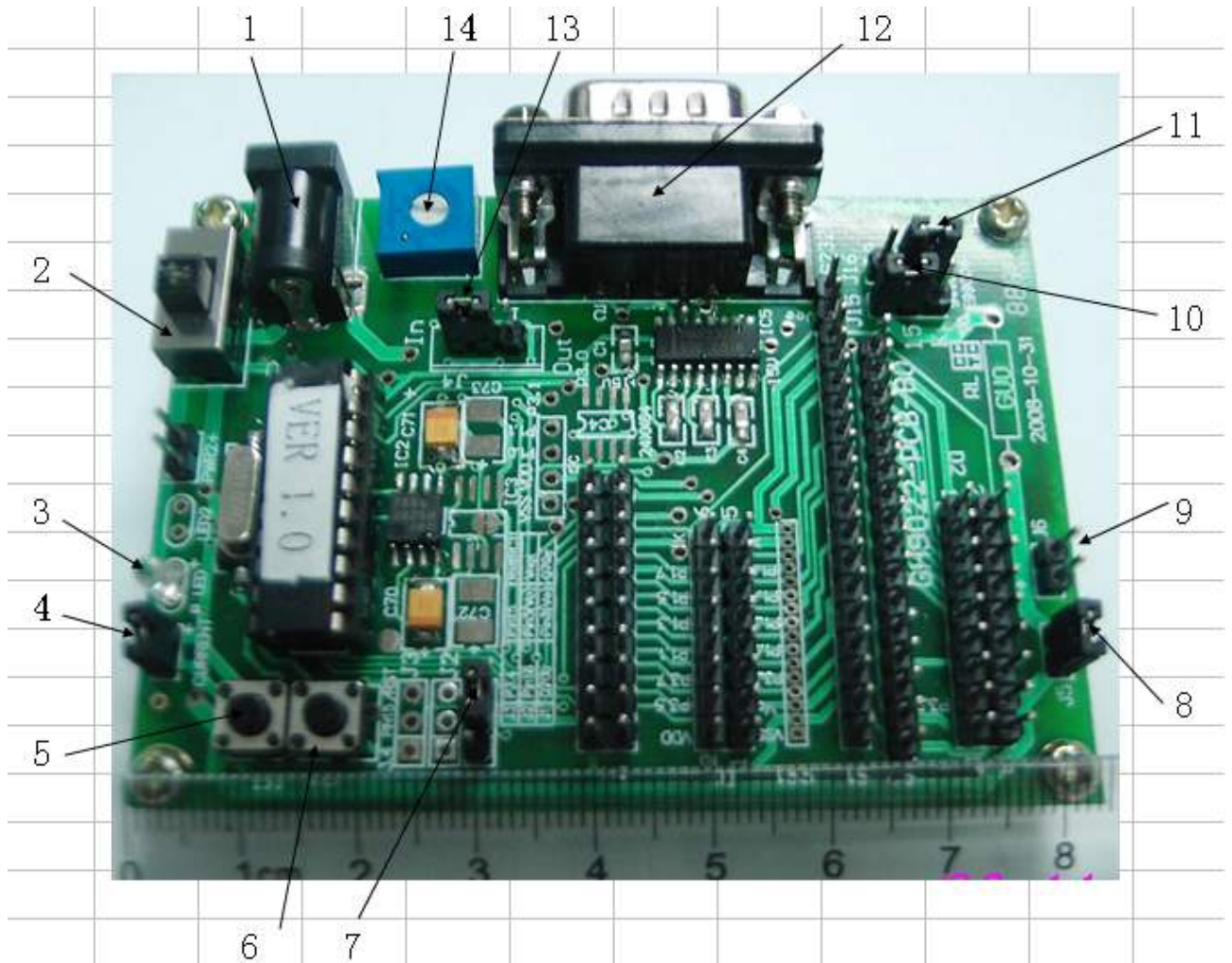


Fig. 1

### 3. Interface For LCM

There are different interface for different LCM. These allow most LCD modules that use an HD44780 compatible controller to be connected directly. Of course, non-standard pinouts can always be wired in using ribbon cable.

#### 3.1 D1: Double Lines Interface , Pitch=2.54 mm

PIN NO.	Symbol	Level	I/O	Connect To MCU	FUNCTION
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1	VSS	0 V	/		GND
2	VDD	+5 V	/		Power Supply for logical
3	V0		/		Power Supply for LCD
4	RS	H/L	I	P3.5	H: DATA, L: INSTRUCTION
5	R/W	H/L	I	P3.3	H: READ, L: WRITE
6	E	H/L	I	P3.7	ENABLE SIGNAL
7-14	D0-D7	H/L	I/O	P1.0-P1.7	DATA SIGNALS
15	A	/	/		Power Supply for LED back light (+5V)
16	K	/	/		Power Supply for LED back light

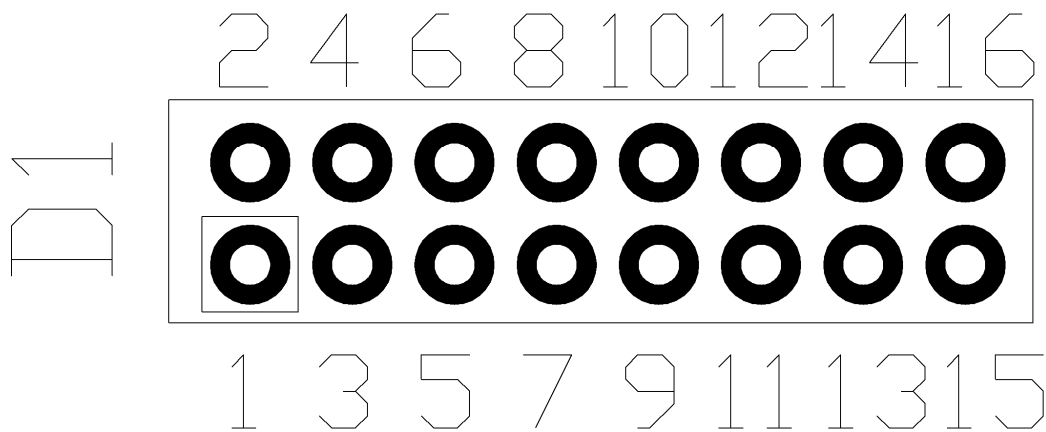


Fig. 2

### 3.2 D2: Double Lines Interface , Pitch=2.54 mm

PIN NO.	Symbol	Level	I/O	Connec To MCU	FUNCTION
1-8	D7-D0	H/L	I/O	P1.7-P1.0	DATA SIGNALS
9	E1	H/L		P3.7	ENABLE SIGNAL
10	R/W	H/L		P3.3	H: READ, L: WRITE
11	RS	H/L		P3.5	H: DATA, L: INSTRUCTION
12	V0				Power Supply for LCD
13	VSS	0 V			GND
14	VDD	+5 V			Power Supply for logical
15	E2	H/L		P3.2	ENABLE SIGNAL
16	NC				

17	A	/			Power Supply for LED back light (+5V)
18	K	/			Power Supply for LED back light

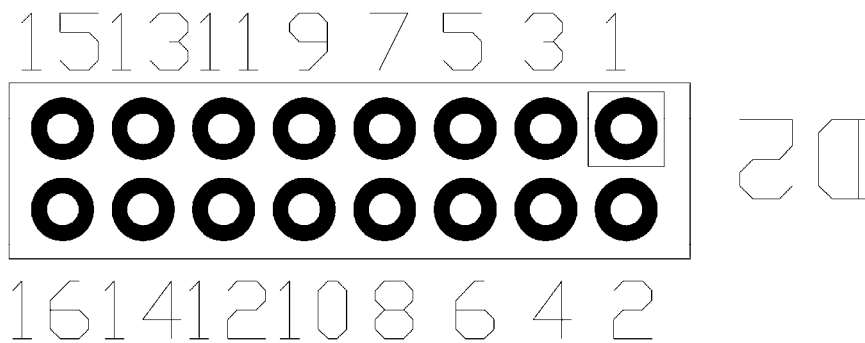


Fig. 3

### 3.3 S1: Single Line Interface , Pitch=2.54 mm

PIN NO.	Symbol	Level	I/O	Connect To MCU	FUNCTION
1	VSS	0 V	/		GND
2	VDD	+5 V	/		Power Supply for logical
3	V0		/		Power Supply for LCD
4	RS	H/L	I	P3.5	H: DATA, L: INSTRUCTION
5	R/W	H/L	I	P3.3	H: READ, L: WRITE
6	E	H/L	I	P3.7	ENABLE SIGNAL
7-14	D0-D7	H/L	I/O	P1.0-P1.7	DATA SIGNALS
15	A	/	/		Power Supply for LED back light (+5V)
16	K	/	/		Power Supply for LED back light
17	Vee		/		Negative Voltage Output
18	NC				No Connect



Fig. 4

### 3.4 S2: Single Line Interface , Pitch=2.54 mm

PIN NO.	Symbol	Level	I/O	Connect To MCU	FUNCTION
16	K	/	/		Power Supply for LED back light
15	A	/	/		Power Supply for LED back light
1	VSS	0 V	/		GND
2	VDD	+5 V	/		Power Supply for logical
3	V0		/		Power Supply for LCD
4	RS	H/L	I	P3.5	H: DATA, L: INSTRUCTION
5	R/W	H/L	I	P3.3	H: READ, L: WRITE
6	E	H/L	I	P3.7	ENABLE SIGNAL
7-14	D0-D7	H/L	I/O	P1.0-P1.7	DATA SIGNALS

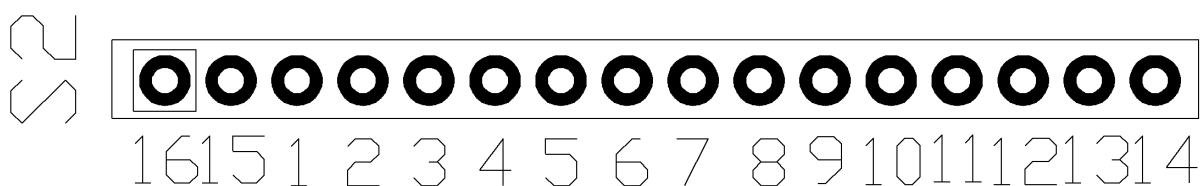


Fig. 5

### 3.5 SS1: Single Line Interface , Pitch=1.27 mm

PIN NO.	Symbol	Level	I/O	Connect To MCU	FUNCTION
1	VSS	0 V	/		GND
2	VDD	+5 V	/		Power Supply for logical
3	V0		/		Power Supply for LCD
4	RS	H/L	I	P3.5	H: DATA, L: INSTRUCTION
5	R/W	H/L	I	P3.3	H: READ, L: WRITE
6	E	H/L	I	P3.7	ENABLE SIGNAL
7-14	D0-D7	H/L	I/O	P1.0-P1.7	DATA SIGNALS
15	A	/	/		Power Supply for LED back light
16	K	/	/		Power Supply for LED back light

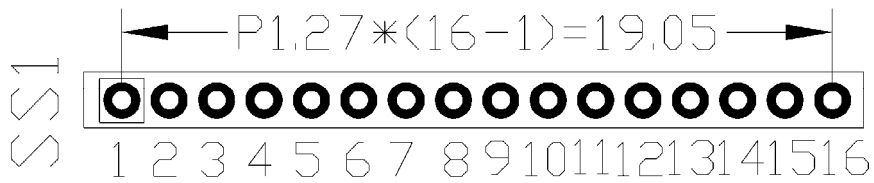


Fig. 6

## 4 . General Operation

Plug your LCM in correct interface and make sure that the J15 and J16 be in correct position for back light power supply. Connect the RS232C cable to a PC COM port while both the CLCM-E&D and the PC be off.

Turn on the CLCM-E&D power supply and adjust the trimmer resistor to get a good contrast. The LCM display the character one by one automatic, the default LCM type is 20\*2 .



Fig. 7

When you press the step key, the display just add one character once press.





Fig. 8

## 5. PC Software Operation

The PC software is working for Windows 2000 or Windows XP. Copy the SNDclm.rar to you computer and unzip it. Running the SNDclm.exe, it will appear as follow.

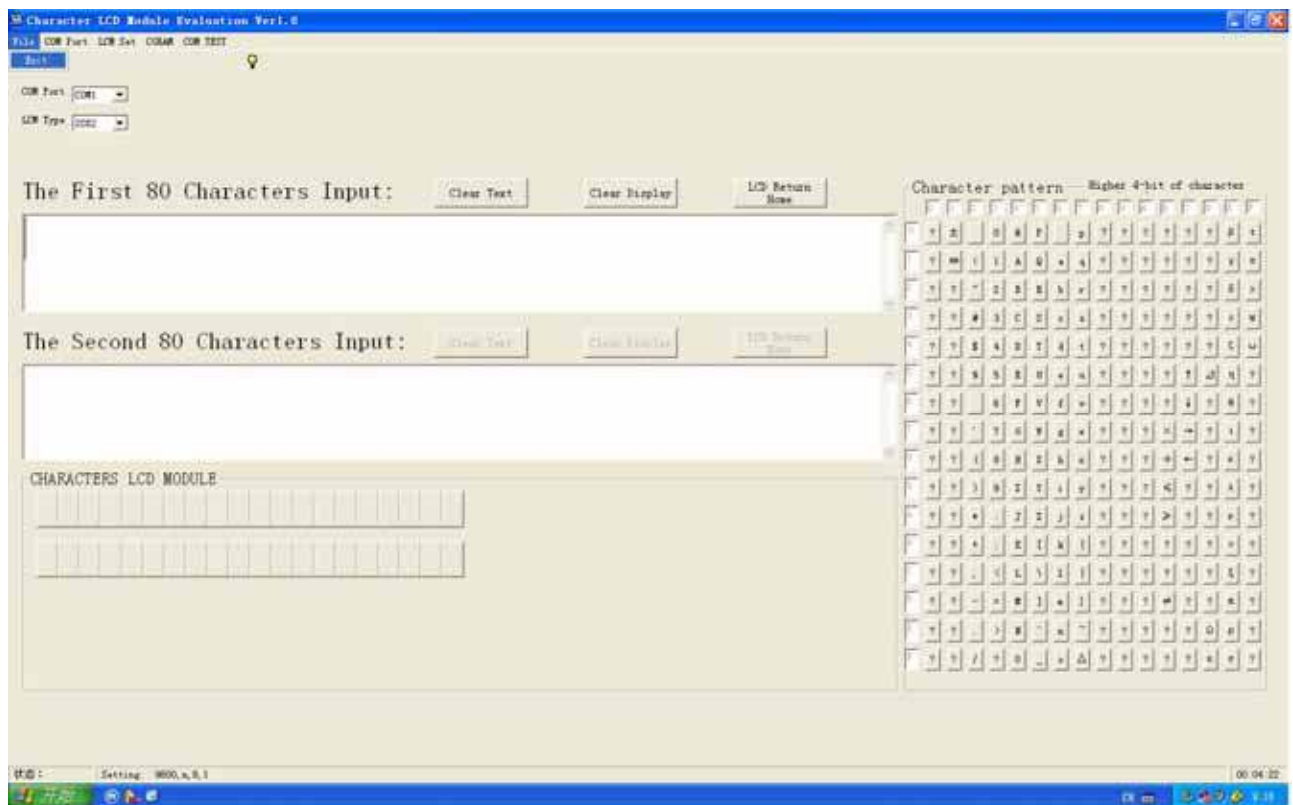


Fig. 9

## 5-1. Input characters

Select the COM Port and LCM Type and open the COM port, The LCM end the automatic display and the cursor return home. You input the character in the TEXT box or click the character in the Character pattern, the character will display on the LCM.

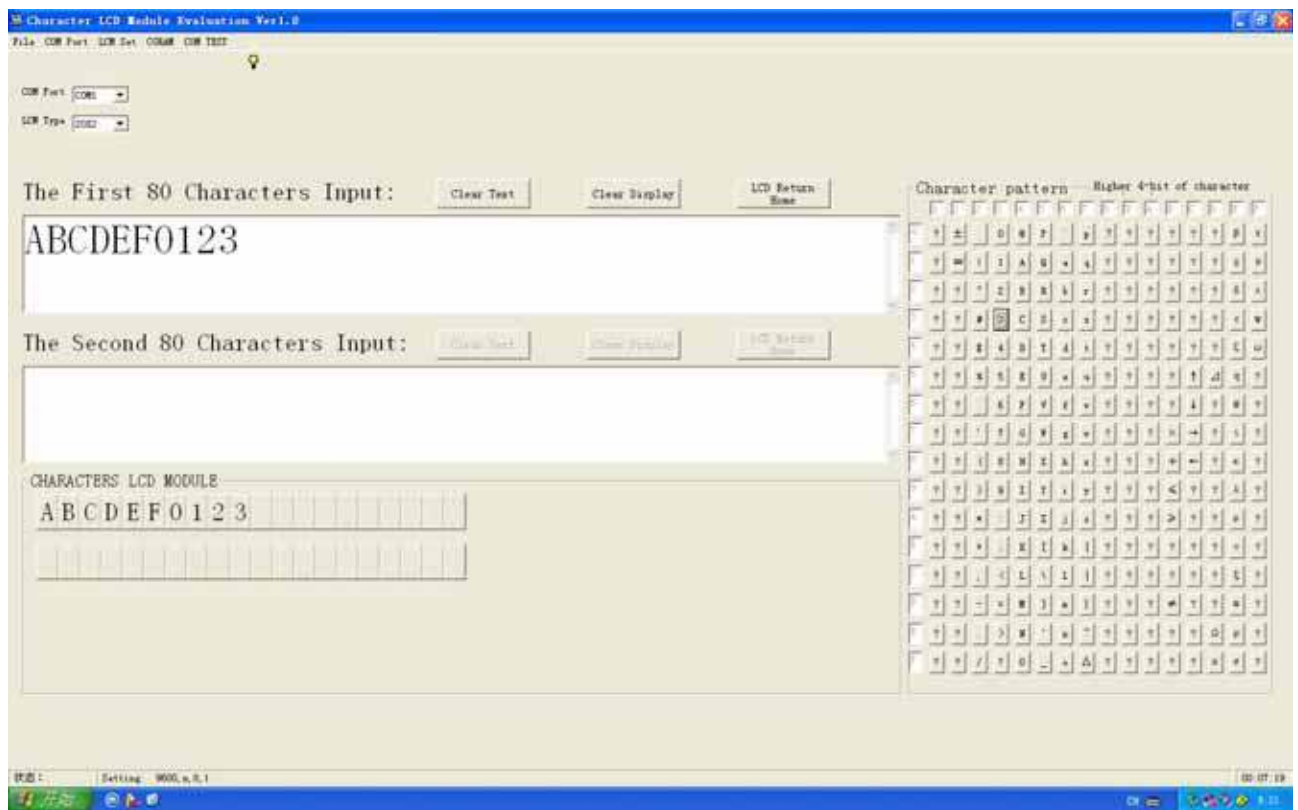


Fig. 10

## 5-2. LCM Function Set

Click the LCM Set – Function Set, the LCM Function Set Windows will appear, there are 4 functions set.

- (1) Entry Mode Set ;
- (2) Display ON/OFF Control ;
- (3) Cursor or Display Shift ;
- (4) Function.

You can change the select by click the function, and click the OK key to make sure the select and click the Cancel key to cancel the select. More details see the HD44780 or S6B0069 or equivalent IC's specification.

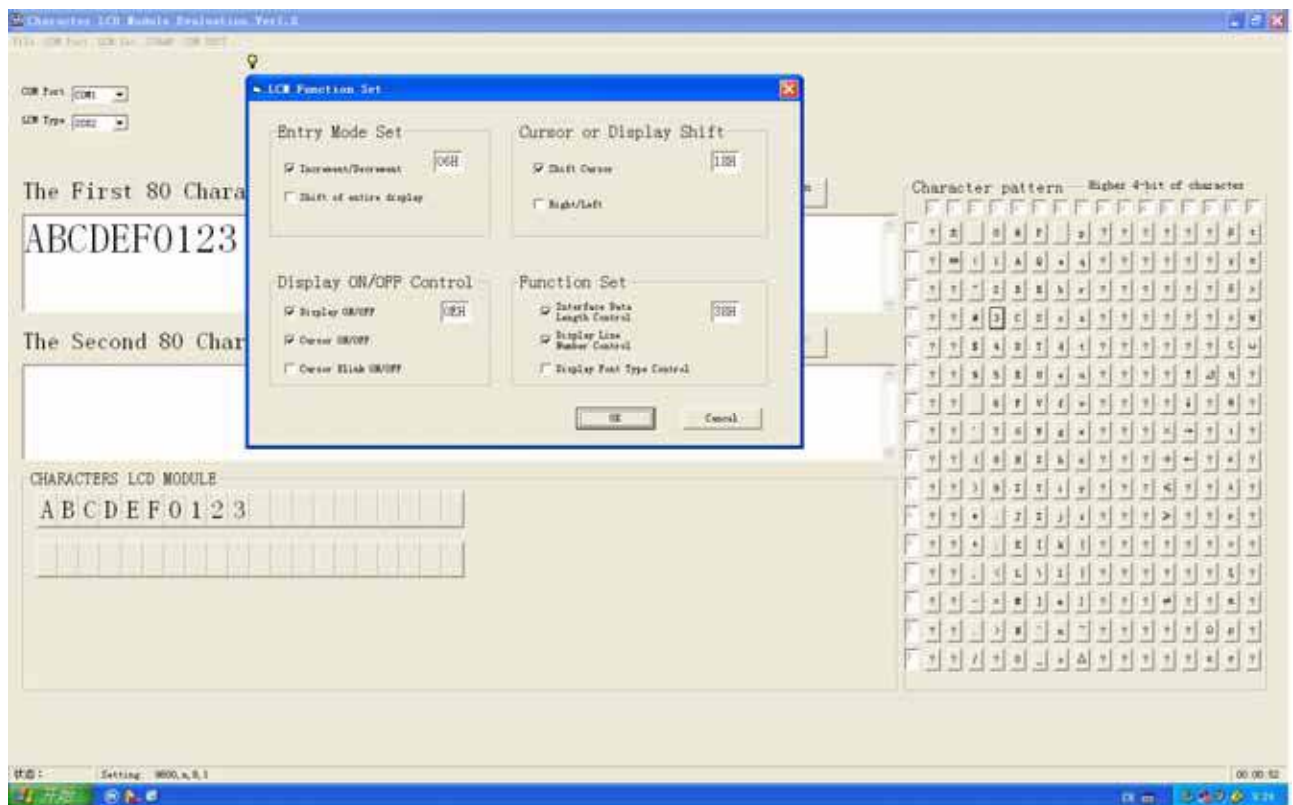


Fig. 11

### 5-3. Write CGRAM

Click the CGRAM – W\_CGRAM, the Write CGRAM Windows will appear.

You should select the chip and the CGRAM Address, and click the character's dot you needed, then click the OK key to make sure the select and click the Cancel key to cancel the select. More details see the HD44780 or S6B0069 or equivalent IC's specification.

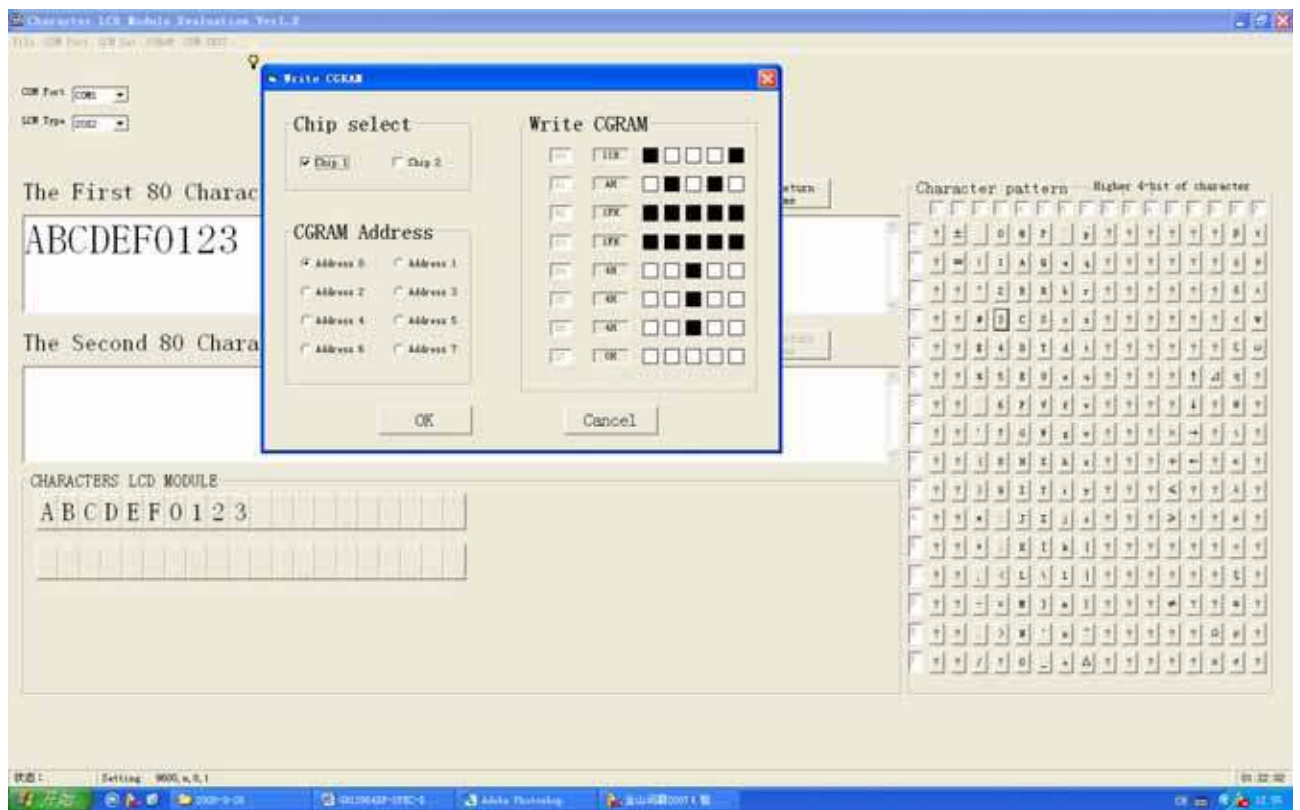


Fig. 12

## 5-4. COM\_TEST

If the communication is not good, Click the COM\_TEST – COM\_TEST, the COM\_TEST Windows will appear.

If the communication is good, the numbers is add by one automatic, click OK key to exit. If not good, it will appear a window indicate: “ Please Check the Connect”.

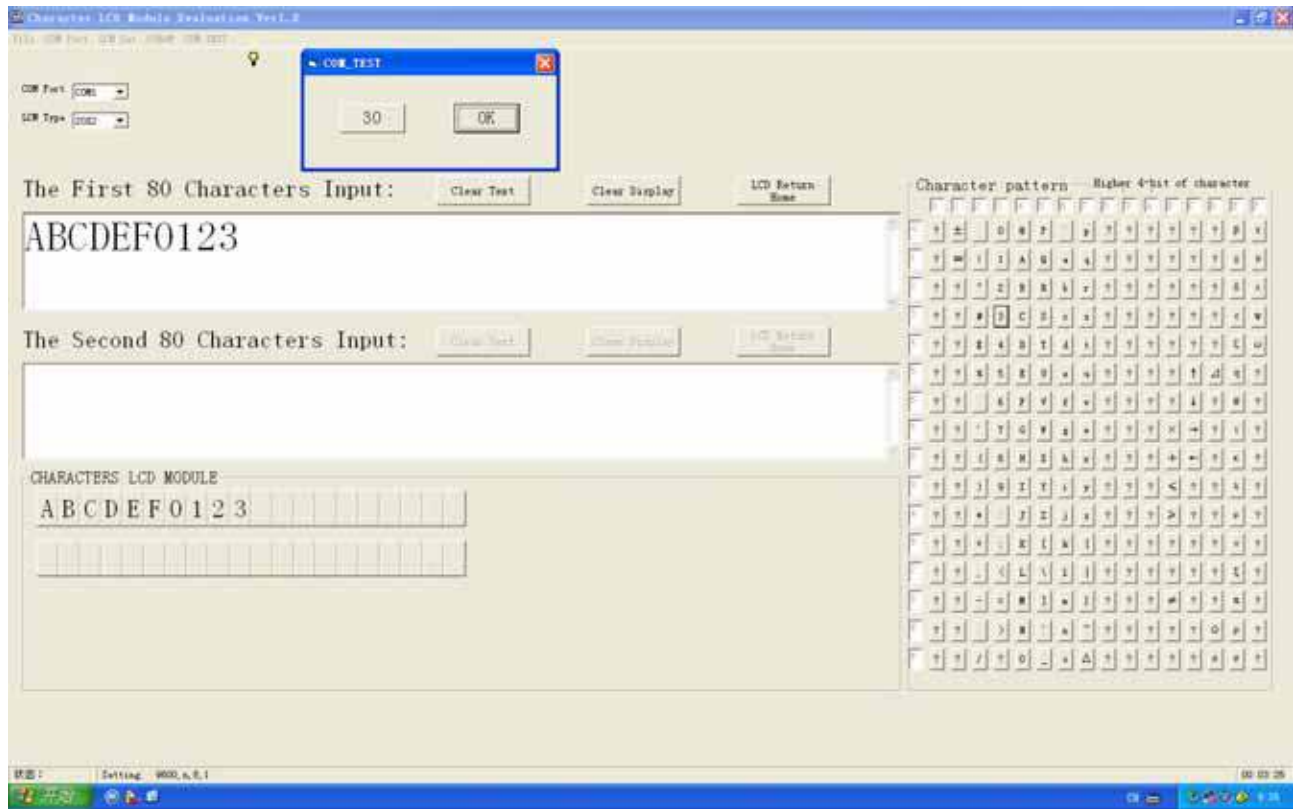


Fig. 13

# REVISION HISTORY

Rev	Content	Date
1.0	Initial Version	2008-10-20
1.1	Add RST key and J1 and J4 in Main components in the CLCM-E&D ( see page 3)	2008-11-15