

CAT # LCD-55

CORRECTED HOOK-UP INSTRUCTIONS

One of our customers, Adelbert Kelley, sent the following information regarding our CAT # LCD-55:

He says, “When correctly initialized, the display is excellent,” however,

“The data sheet sent with the display gives the wrong addresses for the data. This display requires a considerably longer time delay than newer displays to initialize. The combination of these factors make it difficult to get the display working. I suggest that the line ‘set CGRAM address’ give ‘80 hex address’ (instead of 64) and the line ‘DDRAM address’ give ‘hex c0 address’ instead of 80. The other data is correct but should be in the right order. I put this all in one page for my use and I am sending you a copy to use as you wish.

We herewith supply Mr. Kelley’s hook-up sheet, “Initializing the LCD-55” as well as a corrected version of our original “generic” hook-up sheet. We greatly appreciate Mr. Kelley’s information.

INITIALIZING THE LCD-55

Using the Seiko SED1278 controller

Pin 5 of the display goes to Vss and pin 3 should be connected to the arm of a 25K or greater trimpot connected between +5 Vcc and Vss. With many displays the trimpot is not used. With this display it is necessary! Preset the trimmer so it's arm is near Vss.



Load a 16 character string of ASCII letters including spaces, 'READY' example, into RAM. Set the RS and E lines low.



Insert a delay of AT LEAST 20 milliseconds. This is an excellent but older display and needs the time to get ready after power-up. Then send hex 38 to the display first while in the command mode (RS line low). This configures the display.

Pulse the E line high for about 2 microseconds, then wait for 130 microseconds



Send hex 06 to the display and again pulse the E high then low. This instructs the LCD controller to move one position for each data letter, but not shift the characters to right or left.
Wait 130 microseconds.



Send hex 0c to the display. This turns the display on and the cursor off.
Pulse the E line and again wait for ~ 130 microseconds.



Send the hex word 01 to the display and pulse the E line. This clears the display.
Wait 130 microseconds

The display is now initialized. Remember that you must address the display in the command mode before sending data so the LCD 'knows' where to display it.

The left half of the display's address is hex 80 and the address of the right half is hex c0. Using software, transfer the test message to the display in the data mode (RS line high). Adjust the trim pot on pin 3 for best contrast of the letters.



The LCD should show the test message. If the LCD screen shows only black squares, adjust the trimmer on pin 3. If there is no indication of any kind, check the wiring/voltages and the program. Be aware the LCD circuitry near the ends can easily short to a metal panel if precautions are not taken.

(16 characters X 1 line)

● Display Fonts 5 X 11 Dots ● 1/11 Duty Drive

■ ABSOLUTE MAXIMUM RATINGS

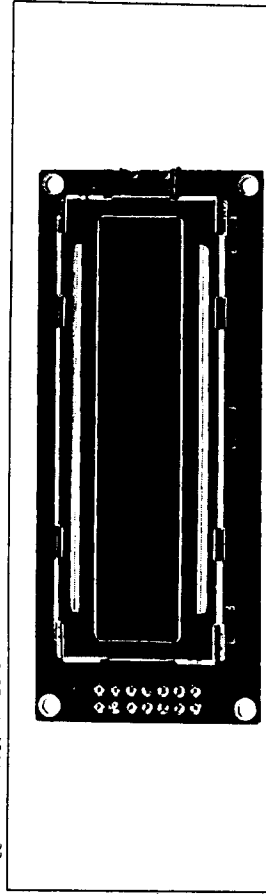
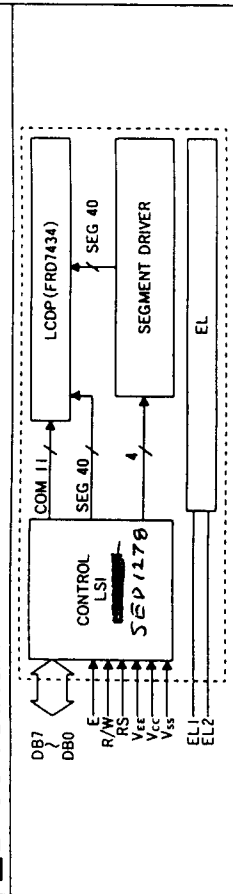
Item	Symbol	Test Condition	Standard Value		Unit
			min.	max.	
Supply Voltage for Logic	$V_{CC}-V_{SS}$	$T_a=25^{\circ}\text{C}$	-0.3	7	V
Supply Voltage for LCD Drive	$V_{CC}-V_{EE}$	$T_a=25^{\circ}\text{C}$	$V_{CC}-13.5$	$V_{CC}+0.3$	V
Input Voltage	V_i	$T_a=25^{\circ}\text{C}$	-0.3	$V_{CC}+0.3$	V
Operating Temperature	Topr	—	0	+50	$^{\circ}\text{C}$
Storage Temperature	Tstg	—	-20	+70	$^{\circ}\text{C}$

■ ELECTRICAL CHARACTERISTICS

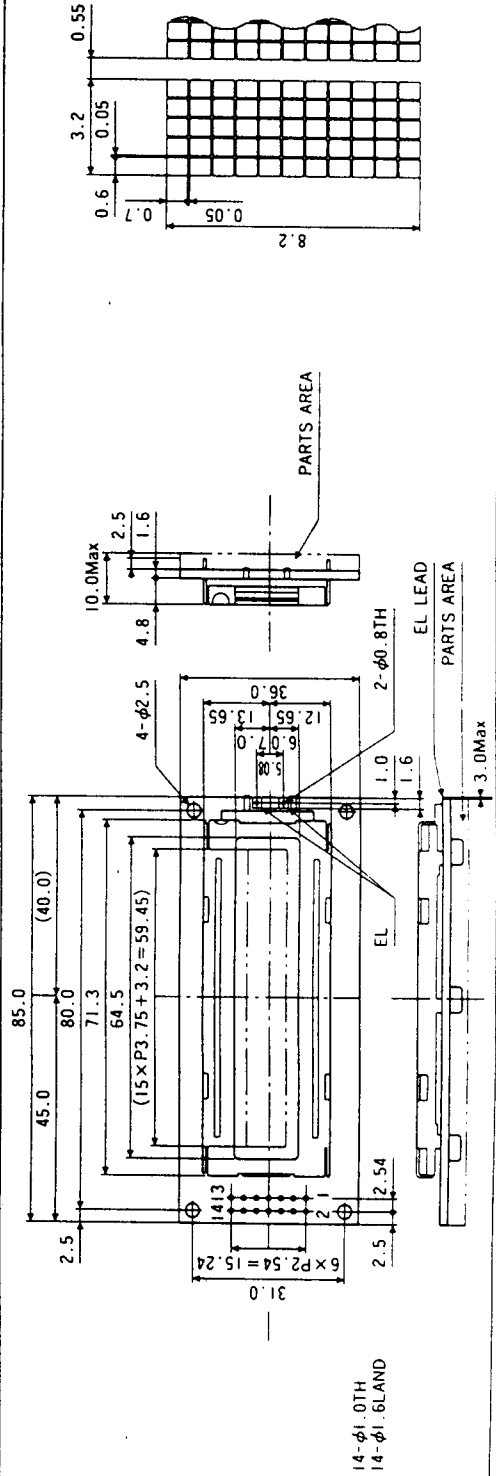
Item	Symbol	Test Condition	Standard Value		Unit
			min.	typ. max.	
Input "High" Voltage	V_{IH}	—	2.2	V_{CC}	V
Input "Low" Voltage	V_{IL}	—	—	0.6	V
Output "High" Voltage	V_{OH}	$-I_{OH}=0.205\text{mA}$	2.4	—	V
Output "Low" Voltage	V_{OL}	$I_{OL}=1.2\text{mA}$	—	0.4	V
Supply Current	I_{CC}	$V_{CC}=5.0\text{V}$	2.0	4.0	mA

* $V_{CC}=5.0\text{V}\pm 5\%$, $T_a=25^{\circ}\text{C}$

■ BLOCK DIAGRAM



■ EXTERNAL DIMENSIONS



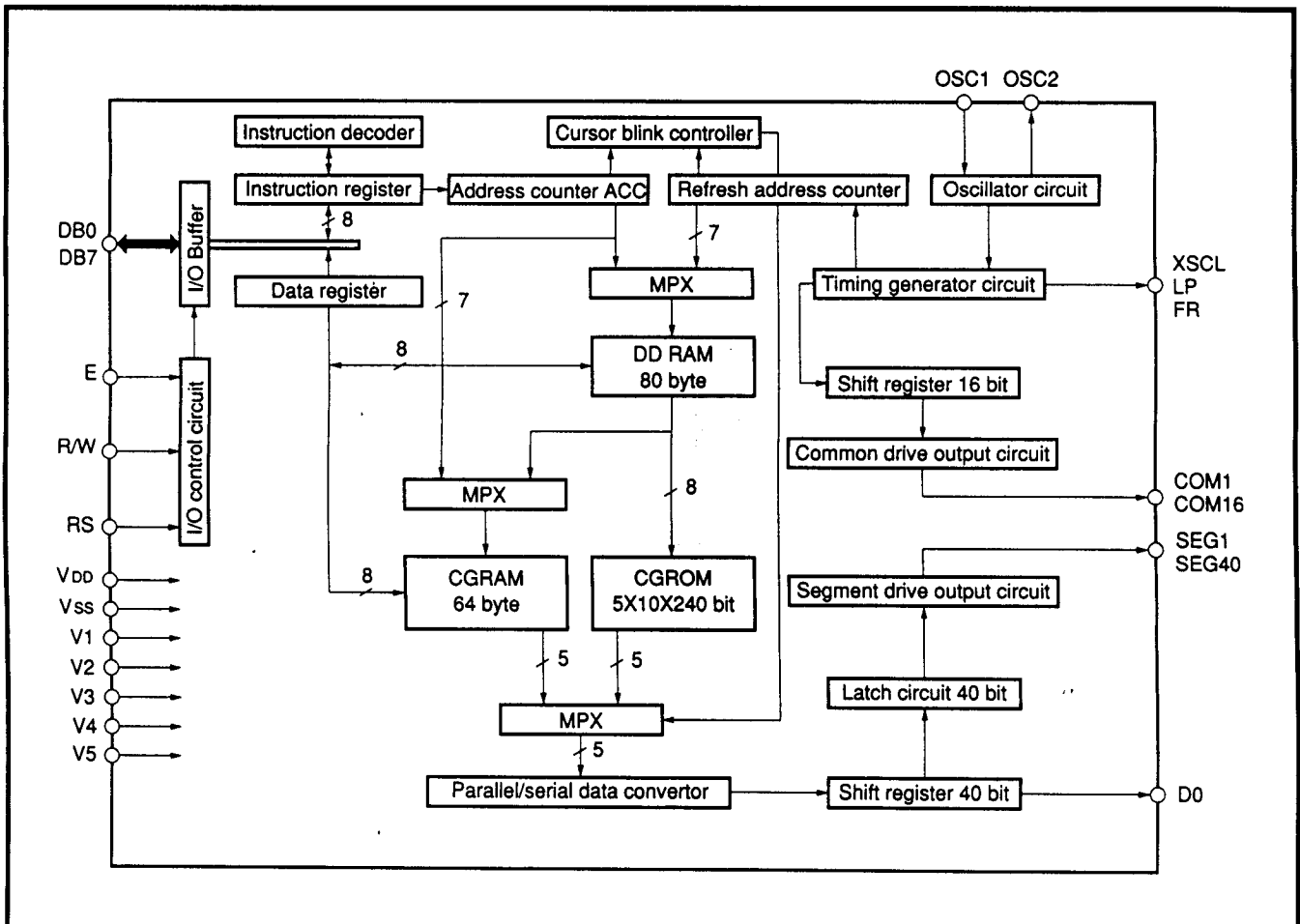
■ Outline

SED1278 is the dot matrix type LCD Controller driver for the Character display only. Maximum of 80 Characters can be displayed by controlling the 4 bits, 8 bits MPU. 192 types of internal characters generator ROM are prepared. And it can 64 bytes (for 8 types in 5 x 8 dots) character generator RAM which users can register is built in. So it can be used for display of high flexibility.

■ Features

- Built in a display data RAM 80 x 8 bits : for 80 characters
- CGROM (192 characters), built in CGRAM (8 characters) (it can be extended to CGROM 256 characters)
- Built in CR Oscillator circuit (putting a resistor outside), built in a Power ON reset circuit.
- Maximum Display Digit x Line 40 digits x 2 lines, 80 digits x 1 line
- Duty Ratio 1/8, 1/11 or 1/16 (by setting a command)
- 2 Frames AC Drive type (B type)
- High Speed Bus Interface with 4 bits and 8 bits MPU
- A lot of Display Control Instructions
- Character Font 5 x 7 dots + Cursor Line (Also enable for 5 x 8 dots)
5 x 10 dots + Cursor Line
- Cursor Font Underline or All dots blinking
- Single Power Supply 5 V ±10% (Logic System)

■ Block Diagram



■ Display Commands

Command	DB10	DB9	DB8	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	
CLEAR DISPLAY	0	0	0	0	0	0	0	0	0	0	1	
CURSOR HOME	0	0	0	0	0	0	0	0	0	1	*	
ENTRY MODE SET	0	0	0	0	0	0	0	1	1	I/D	S	Increment in 1, decrement in 0 Enable display shift in DB0=1 No enable display shift in DB0=0
DISPLAY ON/OFF	0	0	0	0	0	0	0	1	D	C	B	Display ON in DB2=1, display OFF in DB2=0 Cursor display ON in DB1=1, cursor display OFF in DB1=0 Blink ON in DB0=1, blink OFF in DB0=0
CURSOR/DISPLAY SHIFT	0	0	0	0	0	0	1	S/C	R/L	*	*	Display shift in DB3=1 Shift to the right in DB2=1, shift to the left in DB2=0
SYSTEM SET	0	0	0	0	0	1	DL	N	F	*	*	8 bit in DB4=1, 4 bit in DB4=0 2 line display in DB3=1 (1/16 duty) 1 line display in DB3=0 5 x 10 dots in DB2=1, 1/11 duty 5 x 7 dots in DB2=0, 1/8 duty
SET CGRAM ADDRESS	0	0	0	1	ACG						Set address, 80 address <i>80 hex</i>	
SET DDRAM ADDRESS	0	0	1	ADD						Set address, 80 address <i>C0</i>		
READ BUSY FLAG/ADDRESS COUNTER	0	1	BF	AC						Busy inside in DB7=1 Reading instruction in DB7=0		
WRITE DATA	1	0	Write Data									
READ DATA	1	1	Read Data									