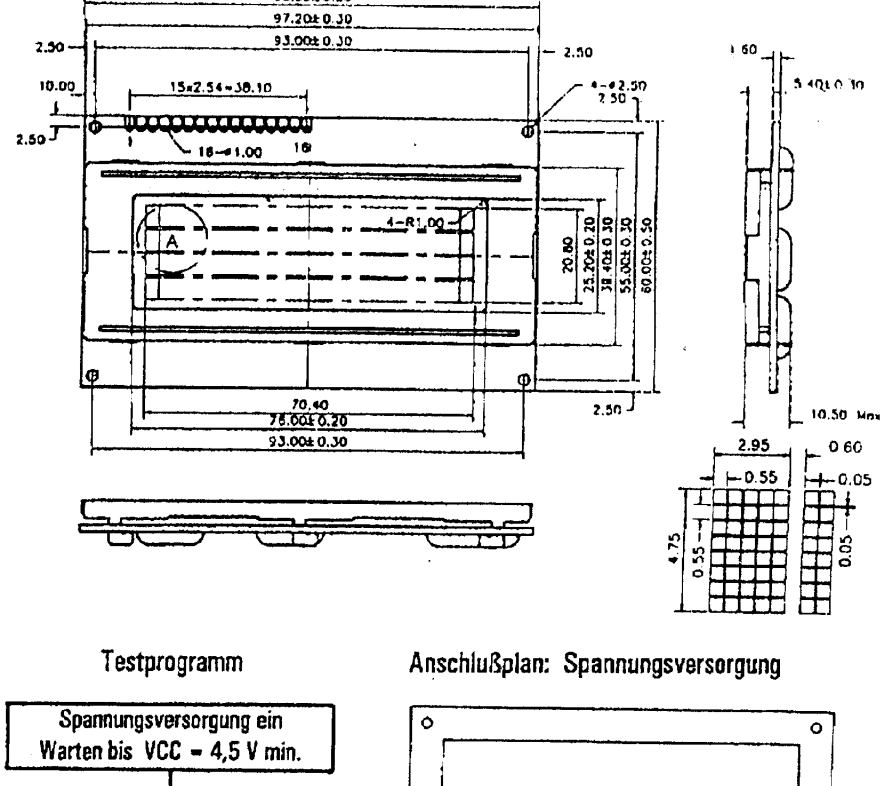
Anschlußbelegung

Pin Nr.	Symbol	Wert	Funktion	
1	V_{SS}	-	0 V	Spannungsversorgung
2	V_{DD}	-	5 V	
3	V_{EE}	-	-	
4	RS	H/L	H: Dateneingabe L: Befehlseingabe	
5	R/W	H/L	H: Daten lesen L: Daten schreiben	
6	E	E.E>L	Enable Signal	
7	D0	H/L		Datenbus *
8	D1	H/L		
9	D2	H/L		
10	D3	H/L		
11	D4	H/L		
12	D5	H/L		
13	D6	H/L		
14	D7	H/L		
15	A	-		
16	K	-		

* Bei 4-Bit Ansteuerung werden die 8-Bit (ASCII) Befehle / Daten geteilt. D.h. zuerst werden die höherwertigen 4 Bit und dann die niederwertigen 4 Bit über den 4-Bit Bus D4-D7 eingegeben. Die 8-Bit Ansteuerung erfolgt über den gesammten Bus D0-D7.
** Anschluß LED-Version: Anode (+ 5 V), Kathode (0V)

DV-20400 20 Zeichen x 4 Zeilen Reflektiv / LED-Hinterleuchtung



Testprogramm

Spannungsversorgung ein
Warten bis VCC = 4,5 V min.

RS = 0, R/W = 0 Befehl 38H
(3 mal ca. 4,1 ms)

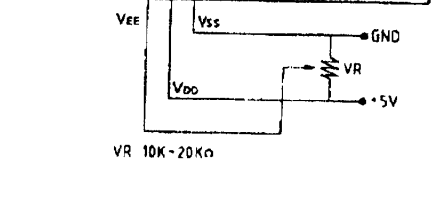
RS = 0, R/W = 0 Befehl 0EH

RS = 0, R/W = 0 Befehl 02H

RS = 0, R/W = 0 Befehl 01H

RS = 1, R/W = 0 Datenfolge
siehe Fonttabelle

Anschlußplan: Spannungsversorgung



INSTRUCTIONS

Instruction	Code										Description	Execution time (when fosc is 250 KHz)
	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0		
Clear display	0	0	0	0	0	0	0	0	0	1	Clears all display and returns the cursor to the home position (Address 0).	82 μs ~ 1.64 ms
Return home	0	0	0	0	0	0	0	0	1	*	Returns the cursor to the home position (Address 0). Also returns the display being shifted to the original position. DD RAM contents remain unchanged.	40 μs ~ 1.6 ms
Entry mode set	0	0	0	0	0	0	0	1	I/D	S	Sets the cursor move direction and specifies or not to shift the display. These operations are performed during data write and read.	40 μs
Display ON/ OFF control	0	0	0	0	0	0	1	D	C	B	Sets ON/OFF of all display (D), cursor ON/OFF (C), and blink of cursor position character (B).	40 μs
Cursor and display shift	0	0	0	0	0	1	S/C	R/L	*	*	Moves the cursor and shifts the display without changing DD RAM contents	40 μs
Function set	0	0	0	0	1	DL	N	F	*	*	Sets interface data length (DL) number of display lines (L) and character font (F).	40 μs
Set CG RAM address.	0	0	0	1	A_{CG}						Sets the CG RAM address. CG RAM data is sent and received after this setting.	40 μs
Set DD RAM address	0	0	1	A_{DD}							Sets the DD RAM address. DD RAM data is sent and received after this setting.	40 μs
Read busy flag & address	0	1	BF	AC							Reads Busy flag (BF) indicating internal operation is being performed and reads address counter contents.	40 μs
Write data to CG or DD RAM	1	0	Write Data								Writes data into DD RAM or CG RAM.	40 μs
Read data to CG or DD RAM	1	1	Read Data								Reads data from DD RAM or CG RAM.	40 μs

I/D = 1: Increment I/D = 0: Decrement
S = 1: Accompanies display shift.
S/C = 1: Display shift S/C = 0: Cursor move
R/L = 1: Shift to the right.
R/L = 0: Shift to the left.
DL = 1: 8 bits DL = 0: 4 bits
N = 1: 2 lines N = 0: 1 line
F = 1: 5 x 10 dots F = 0: 5 x 7 dots
BF = 1: Internally operating
BF = 0: Can accept instruction

DD RAM: Display data RAM
CG RAM: Character generator RAM
A_{CG}: CG RAM address
A_{DD}: DD RAM address Corresponds to cursor address.
AC: Address counter used for both DD and CG RAM address.

Execution time changes when frequency changes. (Example) When fosc is 270 KHz:

$40\ \mu s \times \frac{250}{270} = 37 \mu s$